STATE OF INDIANA)
) SS:
COUNTY OF DELAWARE)

IN THE DELAWARE COUNTY SUPERIOR COURT

CRAIG DUNN and PHILIP WILEY, et al.,)
Plaintiffs,)
)
-v-) CAUSE NO.
) 18D01-9305-CT-06
RJR NABISCO HOLDINGS CORPORATIONS, et al.,)
Defendants.)

VOLUME 20
MARCH 9, 1998

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MR. CASSELL: All rise.
THE COURT: Be seated. Good morning, ladies and gentlemen.
ALL: Good morning.
THE COURT: Jury appears in its entirety, together with the alternates. Good morning, Counsel.
ALL: Good morning, Your Honor.
THE COURT: When we left Friday evening, Dr. Ogden was testifying on direct examination. Is Dr. Ogden here?
MR. FURR: He is here, Your Honor.
THE COURT: Would you raise your right hand.

DEFENDANTS' WITNESS, MICHAEL WAYNE OGDEN, SWORN

THE COURT: Be seated, please. Tell the jury your name, please.
THE WITNESS: Michael Wayne Ogden.
THE COURT: Thank you.
MR. FURR: May I proceed, Your Honor?
THE COURT: Mr. Furr.
MR. FURR: Thank you.

DIRECT EXAMINATION
BY MR. FURR:

Q Dr. Ogden, when we left here on Friday, you had told the jury about the methodology that RJ Reynolds had developed for measuring environmental tobacco smoke in nicotine. Do you recall that?
A I did, yes.
Q When was that developed?

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A We began that development in 1985, so I would say in 1985, 1986 is when we had the first complete description of how to measure nicotine.
Q When Reynolds developed that methodology, was there already a methodology in existence for measuring atmospheric nicotine?
A Yes. Not from environmental tobacco smoke perspective, but NIOSH had a method for measuring high occupational exposure that you might encounter from, for example, a tobacco manufacturing facility.
Q Who is NIOSH?
A NIOSH is, stands for, I guess, it's National Institute of Occupational Safety and Health. They develop methods that OSHA uses for workplace monitoring. It's a government agency.

Q Why didn't Reynolds just begin using the NIOSH method for measuring nicotine instead of going through all the effort and time to develop a new method?
A Well, the NIOSH method, as I indicated, was for much higher levels of just nicotine that might evaporate from tobacco leaves as they were made into cigarettes, as an example.
In analytical chemistry, I would say that I would describe that method as not having appropriate sensitivity for studying ETS. That is, you couldn't measure ETS levels. If we had used that method and applied it to ETS, we would get zeros everywhere, so we couldn't find anything.
Q Now, have you and your colleagues at RJ Reynolds developed analytical methodologies that can be used to measure markers in addition to nicotine that are found in environmental tobacco smoke?
A Yes, we have.
Q And I'd ask you first to list the additional markers for which RJ Reynolds has developed methodologies for measurement. Go slow if you would, and I'll ask you some follow-up

questions.
A The most widely used marker that's we've developed, first of all, would be what I would call RSP, which stands for respirable suspended particles. These would be the small particles that you could see, for example, in smoke or in an aerosol.
Q Okay. Keep listing them if you would, and we'll come back and talk about each of them.
A Okay. We developed other markers that are -- that their name is a little bit funny to describe, but one we call UVPM, which stands for ultraviolet particulate matter. I'm giving you in more or less chronological order of how we developed them. Then we have one called FPM, F as in Frank. Stands

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for fluorescent particulate matter. Then we have a method for Solanesol.
Q Solanesol?
A Solanesol. And then another commonly used marker is 3-ethenyl pyridine. We abbreviate it 3-EP.
Q Okay. Anything else for which the methodology has already been developed?
A Those are the most commonly used tobacco

selective markers. We measure many other things, but this is the list of tobacco selective markers that we use most often.
Q Beginning with RSP, would you describe for the jury a little bit about what RSP is and the Reynolds' research evidence in developing a methodology for measuring RSP in nicotine.
A As I said, RSP stands for respirable suspended articulates, or particle matter. These are the small particles of the aerosol. Again, I'm not sure whether the jury has heard about smoke being composed of gases and particles.
Q The jury has heard that.
A They have heard that. Okay. This would be the particle part of the smoke. These are particles that are generally smaller than five microns in diameter or five-millionths of a meter, so they're fairly small particles. And, of course, we know that particles are emitted when people smoke cigarettes. But also particles are emitted from many other things in the indoor environment, so RSP is just one measure of

overall indoor air quality, if you will.
Q Was the work that RJ Reynolds did in developing a methodology to measure RSP in ETS published for other scientists to review?
A Yes, it is. We talked about, I think, on Friday some of the official methods that we have developed, and our RSP method is an official method in several agencies or organizations.
Q Could you identify those agencies or organizations? Let me back up. Are these the agencies and organizations that we talked about on Friday that validate analytical chemistry methods?
A That's correct, yes. The RSP method is currently the official method within ASTM, which is the American Society for Testing and Materials. It currently is a draft international standard within ISO, the International Standard Organization.
Q And RSP was used to measure the particulate phase of environmental tobacco smoke?
A We have used it that way. Since then we have learned a lot more about it, and it's

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not the good marker that people used to think it was. And we've developed other markers, and they're on that list.

Q Would you explain what UVPM is and what RJ Reynolds did with respect to developing a methodology for measuring UVPM in environmental tobacco smoke.

A Sure. As I indicated, the RSP are the particles of tobacco smoke. We can measure by RSP, which is simply we use a filter and we collect particles and we can weigh them. If we collect enough of them, we have a very sensitive balance and we actually weigh the collective particles. But the weight of a particle doesn't tell you where it came from. We have no idea by looking at the weight whether it's a tobacco particle or, you know, flour dust in your kitchen or coal dust or from a wood-burning fireplace or any number of sources of other particles.

So we began, I would say in the early 1980s, 1984, 1985, looking for ways of trying to be more specific, that is, can we take these particles and pick them apart and try to identify which fraction came just

from tobacco smoke and which fraction came from everything else.

This measurement of UVPM was the first measurement methodology that we are aware of that anybody had applied, and we began applying this to try to determine how much was tobacco particles and how much was other particles.

Q And how does UVPM do that?

A What we've done or what we did was we extracted the particles from a filter that we collected them on in a solvent, happens to be methyl alcohol, but then we would measure the ultraviolet absorbance of those particles. And by calibrating the instrumentation so that it was very sensitive to the ultraviolet absorbance from tobacco smoke particles, we could reduce the interference for non-tobacco smoke particles.

Q Let me slow you down. Ultraviolet absorbance, can you explain what you mean?

A Many chemicals absorb light. A good example would be sunscreen. The way that a sunscreen keeps you from getting sunburned

is that the chemical in sunscreen absorbs the UV radiation so that it doesn't get to your skin.

There are chemicals in tobacco smoke that absorb UV light. And we have instrumentation in the laboratory that can measure that absorbance. So it's simply a

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tool that an analytical chemist would use to try to identify and -- compounds or molecules.

Q Did Reynolds publish for other scientists to review the work it had done in developing UVPM as a marker for the particulate phase of environmental tobacco smoke?

A Yes. It's been published several times. It's been presented at various scientific meetings and it also is an official method with ASTM.

Q Okay. Would you tell us what FPM is and what Reynolds did with respect to developing a methodology for measuring FPM as a marker for measuring environmental tobacco smoke.

A Okay. Another property of some chemicals is that they fluoresce. I'm trying to think of a good example of that and I can't come up

with one right now. Well, fluorescent lights would be the obvious ones, I suppose.

There are certain chemicals that fluoresce, which is -- it depends on the chemical nature of that particular chemical whether or not it can fluoresce. But generally there are fewer molecules in nature that fluoresce than do absorb UV light. So it's a very similar measure to UVPM but now we're measuring a fluorescence response from chemicals that are in this solution that we've extracted from the particles.

And --

Q Let me ask you a question in that regard. Was FPM an effort to find a more specific measure of the particulate phase than UVPM?

A Exactly. The reason we investigated FPM is because the reason I was just explaining to you. In nature there are many -- there are fewer chemicals that fluoresce than do absorb UV light. So there is less potential for interference from non-tobacco sources, if we've calibrated it appropriately, which we think we've done. So it's an attempt,

really, to find a more selective indicator of the particles of tobacco smoke.

Q Did Reynolds publish its methodology with respect to measuring FPM as a marker for environmental tobacco smoke for other scientists to review?

A Yes. We first published it in 1990, and, again, it's the subject of official methods within ASTM and ISO.

Q Let's go to Solanesol. Would you explain what Solanesol is and what Reynolds did and what you specifically did with respect to Solanesol?

A I think I told you on Friday that one of the first projects I worked on was to make -- to develop a measurement methodology for

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nicotine in ETS.

One of the second projects that I worked on, in fact, the one I'm most proud of, is the development of Solanesol as a marker. Because what we recognized from our few years of work to that point with nicotine is that nicotine did not appear to be a very good marker of tobacco smoke particles.

I think I told you that we, in fact, found nicotine wasn't even in the tobacco particles, which other people had assumed that it was.

So one of the first projects I took on after nicotine was to look for a single chemical that was in tobacco smoke particles that we could measure, that it would be unambiguous as to where it came from. If we found it in the air, and Solanesol is a single chemical that is a tobacco smoke component; and when we measure Solanesol in indoor air, we are absolutely sure that it came from tobacco smoke.

Q Is Solanesol a marker for the particulate phase or the vapor phase of environmental tobacco smoke?

A It's clearly a marker for the particulate phase.

Q And did Reynolds submit its work on Solanesol to the scientific community through the publication process?

A Again, published and presented many times. It is not an official method yet, but it is in the approval processes within ASTM. It's

in the final approval stages of that organization's method validation process.

Q Dr. Ogden, up until now, all the markers that you've spoken about except for nicotine were measures of the particulate phase of environmental tobacco smoke; is that right?

A That's correct.

Q Would you explain to the jury what 3-EP is and what Reynolds did with respect to evaluating 3-EP as a marker measuring environmental tobacco smoke.

A 3-EP, as I told you, stands for 3-ethenyl pyridine. It's a big, long mouthful of chemical names. But the 3-EP is a molecule that is generated when nicotine is burned. So it's a combustion product of nicotine. There are other combustion products but this is the main combustion product of nicotine. And, again, we're not aware of 3-EP being found airborne in any situation other than resulting from the smoking of tobacco.

This discovery actually came out of our environmental chamber work that I showed you the stainless steel box on Friday, and that sophisticated piece of equipment called

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TAGA, the trace atmospheric gas analyzer.

We were able to measure 3-ethenyl pyridine and starting as early as 1984, we had an idea that this chemical may be a good marker for the gases of ETS. And then, over the years, I developed a method for measuring 3-EP that didn't use that great big laboratory piece of equipment, using equipment that we could take into people's homes and workplaces and restaurants and things like that.

Q Was the work on 3-EP submitted to scientific journals for publication?

A Yes, it is.

Q Has the work on 3-EP as a marker been submitted to the standards organizations?

A Yes. It's also an official method within ASTM.

Q Dr. Ogden, over what period of time did Reynolds do the work that resulted in your findings with respect to the use of those markers -- those chemicals as markers for the measurement of environmental tobacco smoke?

A Are you asking me over what period of time

we developed the methods to measure them?

Q Yes, collectively for all of them.

A Well, as I indicated, we started the work with 3-EP, RSP in nicotine in the early days of our chamber, so that would have been 1983, 1984.

The more selective markers and the more portable methods for measuring those we developed through the -- starting in 1985 through the late '80s, I would say, up to 1990. At 1990 we had a complete description of all of these methods that were available in the scientific literature or that we had presented at a conference somewhere.

Q Do these markers represent the current state of the art for attempting to characterize how much environmental tobacco smoke is in a given environment?

A Yes, I think they do.

Q Has Reynolds continued to work on developing additional markers for environmental tobacco smoke in indoor environments?

A Yes. There are many things that we have measured either in a laboratory or tried to measure in a field setting. But these are

the most commonly used that are the most informative that tell us what we want to know.

Q Has Reynolds done any work with respect to the presence of tobacco-specific nitrosamines from environmental tobacco smoke for use as a marker?

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A Yes. There are really two efforts that I would describe. One would have been in the late 1980s; we had methodology to measure mainstream and sidestream smoke nitrosamines using that small glass bottle that I showed you on Friday. So we had some measurement methodology that was associated with that.

We took that methodology into our environmental chamber, that stainless steel box, and tried to measure high levels of nitrosamines -- or tried to measure the nitrosamines that might be in high levels of ETS generated in that chamber. And we couldn't find anything. And that's back to this sensitivity of the methods. In other words, that methodology was not able to see anything.

More recently, in the last two to three

years, we have renewed our efforts to try to measure realistic levels of nitrosamines in ETS. And that's a project that's currently going on in my laboratory now.

Q Has any organization developed a methodology that can be used to measure tobacco-specific nitrosamines from environmental tobacco smoke in typical real world environments such as an office where smoking is not restricted?

A No.

Q Well, can the methods that you've developed to measure tobacco specific nitrosamines in the chamber that you described be used to measure tobacco-specific nitrosamines in a typical real world environment?

A Let me clarify what I said a minute ago. Maybe it was confusing. The chamber measurements that we have been successfully able to measure nitrosamines are in that very small glass bottle. In fact, it happens to be right at my feet. This one. We can measure nitrosamines ins in this chamber. But we have not, to this date, been successful in measuring nitrosamines in

the larger room-size chamber. The methods just aren't sensitive enough. So we currently don't have a scientifically validated method for measuring nitrosamines in a room-size chamber that would be applicable to ETS. We can measure them in sidestream smoke but not ETS.

Q Dr. Ogden, if a scientist were to conduct an experiment whereby 30 to 60 cigarettes were smoked in an 18-cubic-meter chamber, would that provide you -- and tobacco-specific nitrosamines were measured in the smoke that was generated under those conditions, would that provide you any information with respect to the exposure of nonsmokers to tobacco-specific nitrosamines in real world

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environments?
A No.
Q Why not?
A Well, a number of reasons. The first and foremost reason is an experiment that you just described would be, the concentration of smoke would be thousands of times higher than it would be in a typical indoor setting. The potential for what I would

call artifact formations, that is, chemical reactions and other things that may go on, and they may actually give you misleading information.
Q What do you mean by artifact formation?
A At very high concentrations, chemicals are much more likely to react, that is, chemically to combine and form something new. And that has been shown to happen in sidestream smoke and also in mainstream smoke. So the first thing you would have to do to study ETS is to generate real ETS. That is, at low concentrations, and then see what goes on there.
But to try to predict that from a very high concentration chamber that you just described, I think, would not be a useful scientific exercise for studying ETS.
Q Okay. On Friday you showed us a picture of the environmental chamber that was developed at Reynolds for assessing the chemistry of environmental tobacco smoke. Is that the chamber that Reynolds currently uses for those type of experiments?
A No. The stainless steel box is not

currently used.
Q Has Reynolds developed a new chamber?
A We have.
Q Did you bring a picture of the new chamber?
A Yes, I did.
Q Let me show you the picture that you brought and ask you to explain to the jury the differences between the new chamber and the chamber that you showed them on Friday.
A Through our work in the late '80s, we were very successful in studying the chemistry of environmental tobacco smoke in that stainless steel box. But some of the things we learned about that, and as we tried to develop new experiments, we realized that the chamber that we had was not the best chamber for studying that. That is, we wanted to study, for example, people's reaction to potential irritation, potential sensory annoyance to ETS. And as you can imagine maybe, from that picture, that stainless steel box was not very user friendly.
We decided to build a new chamber facility. In fact, we call them the twins,

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but they're actually two chambers.
Q Excuse me, you call this the twin chambers?
A The twin chambers, right. That we developed in the early 1990s. This is a picture of the inside of one of those. And I think you can see from looking at it, it looks much more like a normal room, pleasing colors, it's much larger. In fact, it was over twice the size of the old chamber. It was much easier to bring in subjects, you know, to have them sit around the table and play cards and things like that while we were conducting an experiment.
Q Dr. Ogden, we've primarily up until now been talking about Reynolds' work in developing markers for measuring environmental tobacco smoke.
I want to switch and focus on the method development for developing ways to measure environmental tobacco smoke in real world environments. Okay?
A Okay.
Q Are these chambers that you described, the first environmental chamber and the twin chambers, used by Reynolds to measure

environmental tobacco smoke in real world environments?
A No.
Q Why not?
A Well, they're not real world environments. They're laboratory settings. We use them to develop our understanding of how to measure ETS in real environments, but they're not the real environments that we're ultimately seeking to know about. So they're simply laboratory tools that allow us to develop our understanding and develop our methods and markers that we've talked about.
Q Has Reynolds developed a series of methodologies for measuring environmental tobacco smoke in real world environments?
A Yes, we have.
Q What was the first one?
A I'm trying to think back. The first attempt that we undertook to try to measure ETS in a real world environment was to take some of the equipment out of our chambers, and we developed what we called in the lab a blue box sampler, and this was a fairly big thing. Actually, it was about the size of

your podium there.
Q Is this the equipment that you took out of the chamber?
A Some of it, certainly. Not all of it. But there are pieces there. Basically what we took was a large blue box on wheels about the size of your podium, and a lot of these

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things were like rack-mount stereo components, we could put them in racks. And we would actually reel this thing -- in fact, the first place we used it was a Christmas party. That would have been probably 1985.

Q How did the blue box work in those type of environments for measuring environmental tobacco smoke?

A It's a cliche, but there's good news and bad news. The good news was that it worked very well. I mean, it measured what was in the air very accurately, and we knew that it would because these are very large, very sophisticated laboratory-type pieces of equipment.

The bad news was that it was so large and so awkward that it changed the way

people behaved.

Q What do you mean?

A Well, imagine, if you will, a rack that big with stereo components in it and there are lights flashing and you can hear little things humming, it changed the way people interacted with it. For example, there was one guy that I had never seen smoke a cigarette before, and he actually came over and picked up a cigarette and blew smoke at it to see if it would respond.

There were other people that I knew were smokers that actually left the room to smoke because they didn't want to interfere with the test. So we learned a very valuable lesson, maybe in psychology, that if we're too obvious in trying to measure ETS, we're going to change the way people behave. And if we change the way people are smoking and behaving, we're not getting a correct answer. So we realized this large type of equipment was too obtrusive, too obvious, and likely to lead us to an incorrect conclusion.

Q Does Reynolds still use the blue box

methodology to measure environmental tobacco smoke?

A No. It was dismantled and put back in the laboratory where it belongs.

Q And what methodology was developed next for measuring environmental tobacco smoke in real world environments?

A Well, learning from the blue box example, there was a project that began immediately to try to shrink that down into something that was much smaller. And over the course of the next year or two, we developed a briefcase sampler that had miniaturized versions of many of these detectors and instruments, and that worked quite well for the time.

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Q What was that called?
A Actually, it was called a PASS, a P-A-S-S, which was an acronym for portable air sampling system. This was basically an attache case that was very sophisticated, that had a miniature computer in it. It had -- it could log data, it could record temperature and humidity, it could make other measurements of carbon monoxide. We

could include in that ability to measure nicotine and particles. And at that time UVPM was the extent of our measurement capability.
Q Was the PASS briefcase actually used to actually measure environmental tobacco smoke in real world environments?
A It was used in many places.
Q How was that done?
A Let me say to start off with that the PASS worked so well that we patented that device. Actually licensed that to a company who manufactured those for sale to any scientist who wanted to buy one. We used the PASS briefcase in studies in aircraft cabins. We used them in studies in offices and restaurants and workplaces in a variety of settings.
Q Let me stop you. Were these studies where measurements were actually made?
A Yes. Measurements were made, sure.
Q Please go ahead and explain.
A As I indicated, we made measurements in a variety of environments; aircraft cabins, restaurants, workplaces, offices, probably

others.
Q Were the PASS measurement studies published in the scientific literature so that other scientists could review the measurements that were being made?
A Yes, they were.
Q What were the major lessons that were learned from the PASS measurement studies?
A There were a variety of objectives in each experiment that was conducted. For example, one of the objectives in measuring ETS aboard aircraft cabins was to determine if the separation of smokers and nonsmokers was effective at minimizing ETS in the nonsmoking section. So an experiment was designed to study that.
And we found out very clearly that it was, that there was very significant differences in ETS concentration in the smoking and nonsmoking sections.
Q Let me stop you there. Did the separation of smokers and nonsmokers into different sections entirely eliminate the ETS exposure of nonsmokers?
A In general, not. In an aircraft cabin, if

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after you got more than two or three rows away from the smoking section, essentially yes, it was zero. But, for example, in a restaurant, we would find that, in most cases, it reduced the levels in the nonsmoking sections to very, very low levels, but with this sophisticated instrumentation we could still measure some things, yes.

Q Okay. Is the PASS briefcase the methodology that RJ Reynolds currently uses to measure environmental tobacco smoke in typical environments?

A No, it's not.

Q And could you give me a label for the type of methodology that's currently used?

A Well, I would describe the PASS briefcase as an area sampler. That is, it's something that you could set in a seat in an airplane or you can set in a seat at a restaurant and sample the air in a particular area.

Through the late '80s and certainly into the early 1990s, we and other scientists came to the conclusion that that's not the best information that we need

to get. What we need to get is what we would call personal exposures. So we developed and used, after the briefcase, we used personal sampling equipment; that is, equipment that you would actually hang on somebody's person and they would wear it wherever they went. So that's the type of studies that we then began doing in the early 1990s.

Q Dr. Ogden, have you brought with you today some examples of the personal samplers that were developed at RJ Reynolds for use in measuring tobacco exposures?

A Yes, I have.

Q With the Court's permission, I'd like to ask you to step down and use those devices to demonstrate to the jury the current state of the art for measuring environmental tobacco smoke in real world environments.

A Okay. Would it be possible to get a small table or a chair or something?

Q We've got a chair.

A Okay. Maybe I'll just bring it all out.

Q Do you need a second chair to set things on?

A It might be helpful, sure.

Q What's that contraption, Dr. Ogden?

A Be kind now. I spent years developing this. This is actually a prototype of a personal sampler that we developed starting in, I would say, 1992. And I can describe for you what it is. I brought some of the individual components that might be more

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illustrative in describing what this is, but basically this is -- there are pumps down here in this box that actually suck air. Of course, you can see the hose that's connected here, and we actually draw air through this device up here. And there are pieces inside here that actually collect different things.

For example, there's a small tube inside here that collects nicotine. There's a filter inside here that collects the particles of tobacco smoke.

Q Let me ask you first, you describe this as a personal sampler. Is that actually worn by the person whose exposure is being sampled?

A It is. In fact, this is a typical way that it would be worn or could be worn. Some people would adjust this to wear either up

on a collar or something, but many people would leave this what's called in the breathing zone. If you imagine, draw a two-foot raised circle around your nose, that's generally the breathing zone.

Q Is it battery powered?

A It is.

Q Can you turn it on and show us how it works?

A All right. Let me take it off just so I can point to it a little bit easier. This is a prototype that we developed, and it looks homemade because it is homemade. Let me show you the components here.

There's a pump on the inside, and we've actually taken some of the parts away from it to make it lighter. There are batteries underneath here. We have a timer here that actually will log the number of minutes that the sampler is run.

Q Why do you need that?

A Well, in an indoor air quality study, or personal monitoring study, we do several things. One, we would ask the participant to write down on a diary what time you start the pump. We would ask them to write down

what time they stopped the pump. We need to know how long the pump ran so that we can make sense of the measurements, so we actually calculate a concentration and then actually calculate exposure.

Sometimes things don't work like you expect them to. Sometimes people would forget to write down the time. Sometimes the pump would fail, you know, the batteries would not operate. So it might run for five hours and maybe you had a bad battery, so we would still have a valid sample if we knew exactly how long it would run.

I just switched it on. You can hear it working to pull air. What it's actually doing now is drawing air through this --

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actually two devices. One air inlet is here going through a filter and then one air inlet is here. You can hear when I block it off there and actually sampling for nicotine. And you can see the little timer running here.

Q So this is sampling for nicotine right now?

A It would be, yes, and particles. In fact, we could determine all of those things down

through 3-EP if there was smoking going on in here. We could measure RSP even without smoking because there are particles in here as we speak.

Q Can all the markers down to 3-EP be measured simultaneously with that device?

A Yes, they can. It's simultaneously from the sense of from the sample I'm collecting right now. Once we are back in the laboratory we have to do different things, so it may take us as much as two days to measure all those things on a given sample but we can basically determine that on the samples we're collecting at one time, yes.

Q I think you also said that you have some additional instruments that can illustrate to the jury how the measurements are actually made with this device.

A Right. I realize starting there as I describe it that it's not obvious for some of these pieces you can't see through.

What I've got are just some components that are different, a little bit different, but they allow, I think, a much better envisioning of what's going on. This is

simply a pump that draws air. That is a different kind of a pump inside that box, but this one is one that is sold by a company to do workplace monitoring for like OSHA compliance and things like that.

This is the filter that I talked about. It actually is inside a little holder. You can see the little white filter laying on the top there. This is a different filter than the one I showed you on Friday.

Q How does that work?

A Okay. This is a filter inside a little cassette, and you simply can put it on here and actually switch this on and draw air through it.

I've got a filter -- would it be appropriate to pass this around to the jury?

MR. FURR: Your Honor, would that be appropriate?

THE COURT: Go ahead.

MR. FURR: Would you hand it to Mr. Cassell, please.

THE WITNESS: That would be you.

MR. CASSELL: Yes.

A Obviously in the laboratory we would hold

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these with forceps and wouldn't touch them with our finger but go ahead for now.

That is a filter that's actually made out of Teflon and it has very, very small holes in it. In fact, it has holes that are one micron in diameter which is one-millionth of a meter. You can't really see the holes. You can see the pattern but that's not really the hole, but that's the same filter that's inside this thing.

Q Is that filter used for measuring all these markers for environmental tobacco smoke?

A Well, that filter would be used to measure RSP, UVPM, FPM, and Solanesol.

Q How would you measure nicotine?

A Well, nicotine, we would have to use that little glass tube that I showed you. Again, I have one to pass around.

Q Would you explain what you're passing around now, Doctor.

A This is a small glass tube that is commercially available. We, in fact, worked with the company to develop this particular tube to make it as best as it can be for nicotine.

But that contains little white beads in it. They are actually a polymer. We call them XAD. It's just an abbreviation. But we've determined through experimentation that the XAD are very efficient for trapping nicotine. So as we suck air through that glass tube, any nicotine that's in the air would be stopped on that tube, just like if we suck air through that filter, any particles would be trapped on the filter.

Q Doctor, let me ask you, do you conduct short courses for people interested in measuring environmental tobacco smoke on how to properly use these types of devices?

A Yes, we do.

Q Would you describe that for the jury, please.

A We've done several training shops, workshops, I guess you would say. In some cases it would be just a lecture where I would stand up in an auditorium and show people with slides how to do it.

There are other workshops, people come through the labs. There's a visiting scientist who will actually bring them into

the lab and do much what I'm doing right now. We show them exactly what we do; we show them the equipment; how to calibrate it; to use it; how to store the samples; how to make the determinations in the laboratory. And we've done that more times than I can count over the last ten years or

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so.
Q Dr. Ogden, you began by describing the box that you have opened as a prototype personal sampler; is that correct?
A I did.
Q Has RJ Reynolds made subsequent improvements upon that design?
A We have.
Q Do you have an example of the current personal sampler that is used to measure personal exposure to environmental tobacco smoke?
A I do. That was a sampler that we developed to participate in a study with Oak Ridge National Laboratories. Which is called the 16 City study.
Q Let me stop you there. The jury's heard about the 16 City study. Was this type of

sampler the type actually used in the 16 City study?
A In fact, that is one of the samplers that was used in the 16 City study. We changed it a little bit since then, but, basically, what we did was to change the battery pack. This one was changed to do some studies in Europe and we got into problems with different voltages and things so we went to disposable batteries.
When the 16 City study was conducted, there were rechargeable Nicad batteries there, but that is actually one of the samplers used in the 16 City study.
Q Would you explain how that's been improved in the current version.
A Well, we developed that sampler for use in that study and we liked it so well that we thought others might like to use it, and we filed for a patent, filed a patent application on it. We actually patented that device.
And there's a company -- actually, it's this company, it's SKC that makes this pump and actually makes that little tube that was

going around. They licensed that patent from us and developed this sampler which is actually commercially available. You can buy these. In fact, if you have Internet access you can get a description of this on the Internet with a picture.
But you can see it's a little more polished version. But all the pumps would be underneath here. In fact, they did a very nice job, that's their specialty. But, again, we have the disposable batteries. The off/on switch, ways of calibrating the exposure, timer on here which will actually switch on when you turn it on if, I can get my finger in there.
Q Is it on now?

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A It is on now. It gives you -- basically it's the same timer that you see on that pump. What they've done is dissect that pump and put the guts of it down under here.
This is now actually sampling. One of the other things you may be able to appreciate is this one is much quieter, which is another advantage.
But this one would -- this one is

what's available now. You can see, we've made some modifications up here. That little tube that I passed around is actually inside this housing here. The filter is inside this holder here. And now I'm collecting again a full battery of samples for all those analyses there.
Q Is that the way the device is actually worn during the personal exposure studies?
A Yes, it is.
Q How do you get people to wear that around all day?
A It's fashionable, isn't it? Why people can participate in studies, you're never rightly sure. But certainly they're told that we're doing an air quality investigation. We don't tell them generally that we're studying tobacco smoke, because we don't want to influence their behavior one way or another.
In most studies, we give them an incentive, a monetary incentive to participate depending on the complexity of the study; they're paid a gratuity for successful completion of the study. Most

people are just fascinated by it. Let me have that thing, let's go see what we've got, so they really do that.
Q You say that that technology has been licensed to SKC?
A That's correct.
Q So, is that technology available to any scientist who wants to make ETS exposure measurements?
A It is. These are sold and available commercially. They're in their catalog.
Q And has Reynolds described that technology in the scientific literature?
A Right. In fact, we wrote one entire scientific publication just describing the development of that sampler and, of course, as it's translated into this one here, other than cosmetic differences, there is no difference.
Q Okay. Thank you. Take your seat, please. Okay. We'll leave those here for now. Maybe we can move them at the break so we don't have to stop.
A Okay. Sure.
Q Okay, Dr. Ogden, we've talked about markers

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and methods and briefly about measurements, but I want to go to the work that RJ Reynolds has done in conducting personal ETS measurement studies, okay? Has the company conducted such studies?

A We have, yes.

Q What was the first study that Reynolds conducted?

A Of personal ETS exposure?

Q Yes.

A This would be a study that we did in 1992 in Columbus, Ohio.

Q What do you call that?

A I would call it just the Columbus study.

Q Would you explain to the jury the nature of the Columbus study.

A Okay. In that study, we used a personal monitor that is actually different from what I've showed you there. We developed a different type of personal sampler that could just measure nicotine and 3-EP. So it didn't require the use of a pump. So it was very small, very light weight, and we actually had people wear that for a full week.

There's an advantage to that type of sampler. In other words, we gave up all these other markers, but what we got was exposure measurement for a full week. That was the design objective of that study.

So we had people wear these monitors for a full week. When they were in bed, they simply unclipped them and laid them on the night stand. We had people that worked with smokers, we had people that lived with smokers, a variety of combinations.

We also, in that study, we put that personal monitor on the spouses of the participants that were actually smokers. So we measured smokers' exposure to their own ETS. That's the first time that had ever been done. To my knowledge, the only time that still has ever been done.

Q And Dr. Ogden, did the scientists at Reynolds publish the results of the Columbus study for other scientists to review?

A Yes. It was presented at one meeting and there were two publications from that study.

Q What was the next study that Reynolds conducted?

A The next study would have been in the suburban Philadelphia area. We called it a Pennsylvania/New Jersey study. That used equipment more similar to what I just showed you. In fact, I would say a predecessor to that first black box I showed you. We used that type of equipment to measure personal

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exposures for one 24-hour period. Basically one full day. And, again, the same basic design.

Q What was the study design in the Pennsylvania/New Jersey study?

MR. MOTLEY: Excuse me, Your Honor. Could we have a date for that Pennsylvania/New Jersey study? I didn't hear it, if he gave it.

MR. FURR: Sure.

A I don't remember the exact date. I believe it was late 1992, maybe early '93. The publication would show the date.

Q So the results were published in the peer-reviewed literature for other scientists to review?

A Yes, they were.

Q And how was this study designed?

A Okay. Again, we looked primarily at, of course, in this study we looked for subjects that reported themselves to be nonsmokers. We wanted to measure nonsmokers' exposure. We break the study down into some people that lived with smokers and worked with smokers, some people that just lived with smokers and don't work with smokers, vice versa, so basically we can assess from that study the effect of living with a smoker, the effect of exposure on working with a smoker, the effect on exposure if you've neither lived with nor worked with a smoker and see if we can measure any ETS exposure. So that was the general type of study design.

Q Okay. And would you -- you briefly mentioned, and the jury has learned, that Reynolds participated in what is known as the 16 City study.

A Right.

Q Would you describe what Reynolds' role was in that study.

A Our role in the 16 City study was first, as I described it earlier just a minute ago, to

develop the sampling equipment. To do the type of study that was deemed most worthwhile, there was not equipment available to do that. So we developed the equipment that I showed you based on our previous knowledge and our previous experience with these types of studies.

We participated with Oak Ridge National Lab in collecting the samples. RJ Reynolds' laboratory was responsible for the analysis of the samples and reporting the data to Oak Ridge.

Q Now, Dr. Ogden, I want to ask you, based on -- let me back up. Are you familiar with the results that were obtained in the PASS study, the Columbus study, the

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Pennsylvania/New Jersey study, and the 16 City study?
A Yes, I am.
Q Based on those studies, what did RJ Reynolds learn about the relative exposures to environmental tobacco smoke in various environments?
A One of the prime comparisons that we were interested in was the relative magnitude of

exposure of living with smokers versus working with smokers. And the conclusions from those studies was that living with a smoker resulted in five to ten times more ETS exposure than working with smokers.
Q I'm sorry. I was writing. Five to ten times as much?
A In general, yes. Generally, yes.
Q And how did you learn that?
A Well, by measuring it. By measuring people that -- exposure for people that lived with smokers, by measuring exposure for people that work with smokers and comparing the data that we got.
Q Dr. Ogden, I may have forced you into sort of an artificial way of explaining all of this today. We've talked about markers, methods and measurements as though they were separate topics. Is that, in fact, how the research program at Reynolds was conducted on these issues?
A Not at all.
Q Would you explain how that was done.
A Okay. Since you've got them listed up there, there's some good samples that come

to mind. Basically, I would describe it as an ebb and flow. We do some work with marker development, we then develop a method and we go make some measurements. In general, we learn something from those measurements and then we go back to the laboratory.

For example, we started with the chamber, and we learned some things about nicotine. We developed a method for measuring nicotine in RSP. We used that in a blue box for some measurements at a Christmas party. We learned that didn't work very well, so we went back to the lab and scientists developed the PASS briefcase.

At the same time as that was going on, another group of scientists was working on methods for measuring other markers. We validated and developed those in a chamber, and those were incorporated in the PASS briefcase as they became available.

So really it's, you know, you do a little bit of each one almost simultaneously all the time. And then you make a progress in one area, apply it to another area, and

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then go make some measurements, learn something else, come back and develop markers.

So it's really been a little bit of all three of those for the last 12, 15 years.

Q Dr. Ogden, have you spent a large part of your professional time over the last 13 years working on these issues?

A Yes, I have.

Q New topic. Dr. Ogden, are you familiar with the concept of cigarette equivalents?

A Yes, I am.

Q Would you explain to the jury what is meant by the phrase "cigarette equivalents."

A Okay. Cigarette equivalents is a concept that is used to try to explain the magnitude of ETS exposure basically to laypersons or to people that are not trained in the sciences.

Q How are cigarette equivalents calculated?

A Cigarette equivalents have embedded in them a number of different measurements. First of all, it requires a measurement of exposure that would be derived by using one of these pumping devices, for example, that

I just showed you. You would also have to either measure or assume a person's breathing rate, that is, how much of that air that had that much ETS in it did they actually breathe in. Then you would also incorporate into that the amount of time that they spent in a given environment. Or over what period of time are you going to calculate cigarette equivalents. It could be the eight-hour workday, it could be a 24-hour day, it could be a whole year.

Then to make a comparison, what you do is for the same markers that you've measured in ETS, for the same chemicals, for example, like nicotine, you then have to either assume or measure that same marker in mainstream smoke. That is, how much is in a single cigarette. So what you do is you express ETS exposure in terms of how many cigarettes a smoker would have to smoke to equate to the same exposure.

Q Dr. Ogden, have you and the other scientists at Reynolds done research into the use of cigarette equivalents as a way of describing the relative exposure of smokers and

nonsmokers to tobacco smoke?

A Yes, we have.

Q Would you describe the research that you've done, please.

A The research that we did culminated in a publication last year. It basically is the first attempt that we were aware of, that I

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was aware of, to try to do a historical perspective on how people had used cigarette equivalents. So it involved a thorough literature search of the ways that other scientists had used the term "cigarette equivalents." We incorporated that into our paper.

But also we made new measurements. That is, we measured in mainstream smoke, that is, the smoke that the smoker gets, as many of these markers that we could to allow us to make -- for those scientists that wanted to use cigarette equivalents, to allow them to do the best job that they could with the most accurate information.

Q Was your review of the history of the use of cigarette equivalents published in a peer-reviewed publication?

A Yes, it was.

Q I want to briefly walk through with you the chronology of the use of cigarette equivalents by scientists to describe ETS exposure. Okay?

A Okay.

Q To your knowledge, Doctor, based upon your research and review of the literature, when was the first time that cigarette equivalents were used to describe ETS exposures?

A The first incidence we could find was in 1972.

Q And who was the first person to describe it in the literature?

A It was a Dr. Hoegg.

Q How do you spell that?

A H-O-E-G-G.

Q Who is Dr. Hoegg?

A He's a researcher at the University of Cincinnati.

Q Dr. Ogden, based on what you've told us, I take it that cigarette equivalents can be based upon a comparison of various constituents that the nonsmoker would be

exposed to, to the level of that constituent that the smoker would inhale in smoking; is that right?

A That's right.

Q What constituents did Dr. Hoegg base his cigarette equivalents on?

A He reported two components. One he called TPM, which is total particulate matter; for the sake of our discussion, that would be roughly equivalent to RSP. And he also used carbon monoxide, abbreviated CO.

Q Could you trace for us the evolution of the use of cigarette equivalents by other investigators to describe ETS exposures, chronologically, if you can?

A I can try.

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Q Okay.
A The table that I had in that publication actually took two pages, but there were some, what I would call milestones within that.
Q Okay.
A 1975 there were researchers at the Harvard School of Public Health. Their names were Hinds and First, H-I-N-D-S. They were the

first to use --
Q Where were they?
A Harvard School of Public Health.
Q Okay. Go ahead.
A They were the first that we could find that actually used cigarette equivalents in terms of nicotine.
Q They used nicotine-based cigarette equivalents -- nicotine cigarette equivalents to make the comparison?
A Yes, that's right.
Q Okay. What was the next milestone?
A I hadn't really thought about it in terms of milestones. Let me think about it. There were a variety of uses, certainly from '75 through 1986 or so, some of -- again, other investigators using nicotine as a marker to calculate cigarette equivalents.
Q Do you recall who some of those investigators were?
A Dr. Muramatsu was one from Japan.
Q How do you spell Muramatsu?
A M-U-R-A-M-A-T-S-U.
Q And did Dr. Muramatsu use nicotine as the basis for making cigarette equivalent

comparisons?
A Yes, he did.
Q When did anyone associated with the United States cigarette manufacturing industry first use nicotine as a basis for deriving cigarette equivalents to describe the exposure of a nonsmoker?
A I would say 1986 was our first use of it.
Q And that was Reynolds?
A That was Reynolds, yes.
Q And that was nicotine?
A Yes.
Q Since Reynolds began using nicotine as a basis for deriving cigarette equivalents, have there been other investigators that have continued to derive cigarette equivalents based upon a nicotine comparison?
A Yes, there are.
Q And could you identify some of them, please?
A One name is Brunemann.
Q Brunemann?
A Right.
Q And when was that done, do you know?
A I would say '87 or '88. I'm not exactly

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sure which.
Q Okay.
A Another investigator would be Phillips.
Q And when was that?
A That's more recent. I would say that was '95, '96.
Q And did Brunemann and Phillips use nicotine as the basis for their cigarette equivalent comparisons?
A They did. They may have used others. I know they used nicotine.
Q And were Brunemann and Phillips associated in any way, to your knowledge, with the United States cigarette manufacturing industry?
A No.
Q Dr. Ogden, in addition to using nicotine as the basis for deriving cigarette equivalents, have you used other markers of environmental tobacco smoke to do so?
A Yes, I have.
Q What have you used?
A Well, let's see. Looking at the list of markers here, I've used nicotine, RSP, UVPM, FPM, Solanesol, and a marker called

scopoletin.
Q Called what?
A Scopoletin.
Q Okay. How did you select those chemicals to use as the basis for deriving cigarette equivalents?
A Those were the entire list of markers that we had measured in one or another personal monitoring study. And they were also good markers of ETS based on the criteria of what a good marker should be. And they were also markers for which we had exact measurements for what's in the mainstream smoke, in a typical cigarette.
Q Now, when you're deriving cigarette equivalent comparisons, do you get the same answer regardless of which marker that you use as the basis for the comparison?
A Generally, no.
Q How does that work?
A There are a variety of things that go into that. As you can imagine or hopefully -- maybe you can imagine, that with a range of markers, six or seven different markers, you will develop a sense of cigarette equivalent

exposures over some range. Now, with these markers, which are generally believed to be the best markers of ETS exposure, the range is not all that large, but certainly you don't get exactly the same number.
Q Does the use of nicotine-based cigarette equivalents overestimate or underestimate

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the equivalent exposure that you would get if you used these other markers?
A In general, based on our research, nicotine as a marker tends to overestimate exposure in terms of cigarette equivalents to these other markers.
Q Dr. Ogden, is there a debate in the scientific literature regarding the use of nicotine-based cigarette equivalents to describe nonsmoker ETS exposure?
A Yes, there is.
Q Are you familiar with that debate?
A Yes, I am.
Q Would you describe for the jury the issues that are being debated.
A Okay. Let me think about those for just a second.
One of the central issues is the fact

that if you use a different marker, you may, in fact, get a different answer. So that is not all markers yield the same result in terms of cigarette equivalents.
There are other issues revolving around whether or not you have to use a marker that's actually been measured or whether you can try to predict that from laboratory measurements. Those, I would say, are the two central issues around cigarette equivalents.
Q Okay. New topic, Dr. Ogden. You told us based upon the PASS, Columbus, Pennsylvania/New Jersey, and 16 City study that workplace ETS exposures in environments where smoking wasn't restricted were on average about one-fifth to one-tenth that that someone would obtain living with a smoker; is that correct?
A That's correct.
Q Dr. Ogden, this is a yes or no question. Do you have an opinion that you hold with a reasonable degree of scientific certainty as to how Mrs. Wiley's environmental tobacco smoke exposures at the Marion VA would

compare to the workplace exposures that you measured in these other studies?
A Yes, I do.
MR. MOTLEY: Your Honor, excuse me. I think we need to approach to see where you're going.
THE COURT: All right.
(Bench discussion)
THE COURT: All right. Sorry, ladies and gentlemen.
Continue, Mr. Furr.
Q Dr. Ogden, did you answer that question?
A I think I did, yes. I said yes.
Q Dr. Ogden, I don't want you to provide that opinion yet, but I would like you to explain to the jury how you went about developing

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your opinion with respect to how Mrs. Wiley's workplace exposures would compare to the workplace exposures that you examined in the PASS, Columbus, Pennsylvania/New Jersey and 16 City study. I'm asking you for the basis of that opinion.

A Well, the first thing that I would do, or that I did, was to review what I called the physical evidence in the case. That is, the

description of her workplace in terms of height of the ceilings, how big this space was. What was known about the ventilation conditions, forced air movement, fresh air, these kinds of things. This is what I would look for, in fact, what I did look for.

I looked for a description of the number of -- I'll say it in a more succinct way and then go back and explain it -- the number of cigarettes that could have been smoked in her presence. That would be a combination of the number of people that are likely to be smoking and the opportunity to smoke, to try to derive an estimate of number of cigarettes that may have been smoked, for example, by the patients in the hospital. And compare that to measurements that we've made counting cigarettes that are smoked in a restaurant, for example.

I went further and actually visited the VA Hospital and inspected the work space. So not only did I rely on the blueprints to look at the size of the work space, but actually walked through the ward where she worked and also her office, the nurse's

station, those types of things, to be able to compare what exposures might have been in a scientific way to what we had measured, and the observations that we had made in those various settings where we have made measurements.

Q And what were the sources of those types of information that you looked to to glean that information?

A A variety of sources. I mentioned the blueprints. Of course, a walk through the hospital is obvious. I reviewed the depositions and affidavits of some of her co-workers that had been provided some months ago. The letters and, I guess, I don't know if they were affidavits or depositions by the hospital administrators that described the work space or remodeling modifications that had been made to the work space, the number of patients that would have smoked, the opportunity to smoke, where cigarettes were kept, all those types of pieces of information.

Q Dr. Jenkins -- Jenkins, I did that Friday. Dr. Ogden, did you have access to any actual

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measurements of environmental tobacco smoke in Mrs. Wiley's workplace?

A No. I'm not aware that there are any or were any.

Q Now, in the absence of having access to actual measurements of the exposure of interest, are the types of factors that you've just described the types of factors that exposure scientists customarily rely upon when conducting retrospective exposure assessments, and by that I mean looking back?

A The answer is yes. As a measurement scientist, I would tell you that the best way to determine exposure is to go measure it. In the absence of having a measurement, you would have to rely on these other pieces of what I call physical evidence, factors that would have impacted the level, and you make an assessment based on your scientific expertise and training and having evaluated those in other studies.

Q And in the absence of having those measurements, are the factors that you've just described, viewed by exposure

assessment experts as reliable factors to consider in formulating an opinion?

A Yes. It's the only way to do it.

Q It's the only way to do it?

A Correct.

Q Dr. Ogden, I'd like for you to give the jury your opinion, and I'd like for you to state it with a reasonable degree of scientific certainty, as to how Mrs. Wiley's environmental tobacco smoke exposure at the VA Hospital would compare to the typical workplace exposures that were examined in the studies that you've described today.

A Based on all of the factors that I've described to you earlier, I've seen nothing in the exposure factors or exposure evidence that would indicate that the exposure in her workplace was very different from a typical workplace where smoking is allowed.

Q Dr. Ogden, I want you to assume that there has been testimony in this case that there has been a scientific survey of Mrs. Wiley's co-workers conducted that indicate that after the year 1979, her exposure to tobacco smoke generated by her co-workers would have

been very small. Are you with me?

A Okay.

Q Would that evidence have made a difference in your opinion?

A Let me make sure I understand. You said that from after '79, the exposure resulting from her co-workers' exposure --

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Q No. I'm sorry. I misstated that, if that's what I said.
A Maybe I misunderstood.
Q That after 1979, the scientific survey indicates that the exposures generated from ETS from cigarettes being smoked by the patients would have been very small.
MR. MOTLEY: Sorry, Your Honor, I don't know how to properly phrase an objection to that question.
MR. FURR: It's what we just discussed.
MR. MOTLEY: I understand that. Very small was discussed. The foundation wasn't. And so I object based on the question that was posed.
MR. FURR: Your Honor, I think I've established the Daubert foundation.

THE COURT: I'll allow the question, Rule 703. But why don't you restate your question.
Q Let me start again.
Dr. Ogden, I would like for you to assume that there has been testimony in this case that based upon a scientific survey of Mrs. Wiley's co-workers, that after the year 1979, Mrs. Wiley's exposure to environmental tobacco smoke generated from smoking by the patients would have been very small. Understand?
A I understand.
Q Would that affect your opinion regarding how Mrs. Wiley's ETS exposure would have compared to typical workplace exposures?
A No, it really wouldn't. Because in my review of --
MR. MOTLEY: Your Honor, he was asked a question. He wasn't asked why, and I have an objection to the why business.
THE COURT: He answered the question.
MR. FURR: That's all I have, Your Honor. Thank you.

THE COURT: Thank you, Mr. Furr.
Mr. Motley.
MR. MOTLEY: Good morning, ladies and gentlemen, Your Honor, Counsel.

CROSS-EXAMINATION
BY MR. MOTLEY:
Q Dr. Ogden, my name is Ron Motley. You and I have, I don't believe, ever met.
A Not to my knowledge, no, sir.
Q Dr. Ogden, do you ever go to the movies?
A Not very much, but I do occasionally.
Q Do you remember the movie Casablanca?
A Believe it or not, I've never seen it. I know what it is, though.
Q How about Reservoir Dogs, did you ever see that?

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A No, sir. I never heard of that one.
Q The Odd Couple?
A I'm familiar -- I have seen that.
Q Tin Men, Danny DeVito?
MR. FURR: Your Honor, it seems to me to be not very relevant.
MR. MOTLEY: I'm getting to the relevance.
THE COURT: All right.

Q I'm talking and working all at the same time.
Dr. Ogden, for some reason I can't ever get this chart, it's always lopsided when I'm working with it. You used a word over there a minute ago, and I want to ask you what that means.
Mr. Furr asked you a question about a reasonable degree of scientific certainty. Do you remember that?
A I recall him saying something like that, yes.
Q What does that mean?
A Well, that would, to me, mean the -- a scientific assessment based on the best available evidence.
Q Well, does it mean that it's beyond a reasonable doubt to you?
A That strikes me as a legal phrase. I'm not sure I would use that phrase as a scientist.
Q I want to know as a scientist what that means to you. Does that mean that it's more probably true than not true?
MR. FURR: Objection, Your Honor. This is asked and answered.

THE COURT: No. He can answer that.
Q Do you believe it's more probably true what you -- when you gave your opinion, did you believe that your opinion was more probably true than untrue?
A Yes, I did.
Q Okay. Now, this is unfair to you because you can't see this, but I'm going to read you what it says because I know probably most of the folks on the jury can't read my writing anyway. They said I should have been a doctor because I can't write. But what I wrote up here was ETS is a lung cancer risk for nonsmokers exposed for a long time in a workplace.
Do you agree with that? A risk factor for lung cancer?
MR. FURR: Objection, Your Honor. He's not a health witness. He's exposure in chemistry --
MR. MOTLEY: Your Honor, he's here from the corporation, and I'm entitled under the rule to ask him questions with wide latitude.

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THE COURT: You may answer.
A I'll answer your question, make sure I understand.
Q I want to -- if you cannot answer this, can you tell me whether ETS is a risk factor for lung cancer in nonsmokers who are exposed in a workplace to other people smoking, yes or no?
MR. FURR: Judge, objection.
MR. MOTLEY: He hasn't answered the question. Once he answers the question, he can give his explanation.
THE COURT: You can answer the question yes or no. Are you able to give that statement, opinion?
A Are you asking me for an expert opinion, or are you asking me for a personal opinion?
Q I'm asking you as an RJR scientist, who's worked with ETS. That's what you talked about here for the last two or three hours, right, ETS?
A Sure.
Q Can you tell me as an RJR scientist heavily involved in ETS, is lung cancer a risk factor for nonsmokers exposed in a

workplace, yes or no?
A I'm not sure I can answer that yes or no.
Q You can't, okay.
Can you answer this yes or no: Your position is, and you've already, in your deposition, you can't tell the ladies and gentlemen of the jury whether cigarette smoking is a risk factor -- excuse me, whether cigarette smoking causes lung cancer in people who smoke two to three packs of Camel cigarettes for 30 years, can you?
MR. FURR: Your Honor, I want to object on two bases. First, he's not a health expert. Second, it's not a proper form to start asking him about what he said in the deposition. He's got to ask him the question first.
MR. MOTLEY: I'll rephrase it.
THE COURT: All right. Rephrase it.
Q You know who Andrew Shindler is, don't you?
A Yes, I do.
Q Tell the jury who he is.
A He's the president and CEO of RJ Reynolds Tobacco Company.

Q He's the main man at your company?
A That's not what I said. I said he's the president and CEO of RJ Reynolds Tobacco Company.
Q What company do you work for?
A I work for RJ Reynolds Tobacco Company.
Q Who's the head of him at RJ Tobacco -- if

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he's the president and chief executive officer, is there somebody above him at RJRT?
A Not at RJRT.
Q So he's the main man?
A That's not the word I would use.
Q Who is mainer than he is at RJR Tobacco?
MR. FURR: Objection. Argumentative.
THE COURT: Do you understand the question?
A Well, I don't know what main man means.
Q You're from the south. You know what we mean. You're from the south, aren't you?
A I am, yes, sir.
Q Okay. I'm going to play like I'm from Mexico. Who is numero uno at RJR Tobacco, number one?

A He's the head of RJ Reynolds Tobacco Company. I think I've answered your question.
Q You agree with Mr. Shindler that you, Dr. Ogden, don't know, as you sit here today, 1998, whether or not long-term -- I'm not talking about ETS now. I'm talking about smoking -- people smoking two or three packs a day, my word, causes lung cancer? You don't know, do you?
A As you've asked that question, the answer is no, I don't know.
Q You don't know?
A I know it's a risk factor, but I don't know when you use the word "cause," no, I don't know.
Q So it's the position, your position and the position of your company, which is known to you, that as you sit here today, RJ Reynolds will not admit that a single smoker since 1954, not a single one, not a single smoker, has ever developed a disease called lung cancer caused by smoking cigarettes?
MR. WAGNER: Judge, this is all outside the scope of proper

cross-examination. None of this was gone into on direct.
MR. MOTLEY: He's a party, Your Honor.
THE COURT: Overruled.
Q The answer to my question is you don't know, do you? Not a single one?
A I've lost track of your question.
Q I'll ask it again. I'll ask her to ask the question before the objection.
(The requested material was read by the reporter.)
A I'm not sure I'm here to give you a position statement for the company. I can tell you what my scientific opinion is in areas that I've studied.

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Q Let's go back again. You are not willing, as an RJR scientist, to look this jury in the eye and tell them that a single American has ever had their cigarette smoking cause a case of lung cancer, are you?
MR. WAGNER: Argumentative and repetitive, Your Honor.
MR. MOTLEY: I'll withdraw it.
THE COURT: All right.

Q What is very small? What does very small mean?
A That depends upon the context in which you use it.
Q Well, you used it this morning, didn't you?
A Right.
Q Have you ever seen a blue haze of smoke in a room where 10 or 12 people were smoking, sir?
A I would never describe -- I don't think I've ever described it as a blue haze, no.
Q Have you ever seen it so smokey that you can't really see any people in the background?
A No.
MR. MOTLEY: Your Honor, I would like to show the witness some film clips from some movies now and ask him if that's very small or very large or what because he's expressed an opinion.
MR. WAGNER: Hang on a minute. Can we approach?
THE COURT: All right.
MR. MOTLEY: This may be prolonged, Your Honor. Do you want to --

(Bench discussion)
THE COURT: Go ahead, Mr. Motley.
Q Now, if every -- you'll have a monitor there, sir.
A This one?
Q Yes, sir. Now, I'm going to show you some clips. Can everybody see? We don't have any popcorn, unfortunately. This is from Casablanca. Do you see the fan?
Stop it right there. Sir -- don't show anything yet. I'm asking questions.
Would RJ Reynolds consider the smoke that was in that room, in that movie, Casablanca -- I'm not here telling you -- I wasn't there. Just the pictures portrayed there. First question, would RJ Reynolds consider that very small, medium, or a lot of smoke for people to have been breathing in that room?
A I need to ask you to re-ask that question in a way I can answer it. Are you asking me about concentration or are you asking me about exposure?
Q You used the word "very small" this morning when Mr. Furr asked you, didn't you?

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MR. FURR: Your Honor, that's an unfair question. We talked about very small exposures.

Q I'm going to ask you right now --

THE COURT: That's a fair question.

Q I'll use those words, very small exposures. Is that very small exposure, moderate exposure, or heavy exposure what we just saw on the screen?

A Okay. For the duration that somebody would be in that room, that would be a moderately high exposure.

Q What about that piano player? What if he started up at 5:00 and didn't quit until midnight. That's seven hours, would he have a lot of exposure?

A Yes, he would.

Q And would that exposure from that piano player, if he stayed right there at that same bar for 25 years, seven hours a day, five days a week, would that kind of smoking be a risk for lung cancer for that man?

A I'm not aware that ETS has been shown scientifically to be a risk factor at any level.

Q At any level.

A So to answer your question is, I don't think that it's been shown. I can't say that it's not, but I can say I don't think it's been shown.

MR. MOTLEY: Your Honor, I want to ask this witness now if he agrees or disagrees with the testimony of the witness that preceded him to the witness stand for the defendants, Dr. Bennett. Page 6842.

MR. WAGNER: Objection, Your Honor. It's improper to ask a witness to comment upon testimony of another witness in a case that he hasn't heard. Dr. Bennett was a medical doctor.

MR. MOTLEY: Dr. Bennett wasn't what? He was a medical doctor, was brought in here as an expert witness by RJ Reynolds and the other defendants, Your Honor.

THE COURT: Is your question --

MR. MOTLEY: I'm going ask him if he agrees or disagrees what the jury heard Dr. Bennett say last Friday.

MR. WAGNER: Judge, that's highly improper.

THE COURT: As a basis of his opinion today?

MR. MOTLEY: Yes, sir.

THE COURT: You can do that.

MR. MOTLEY: Thank you.

Q When we're talking about risk factors and environmental tobacco smoke, people work in

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occupations, okay?
A Okay.
Q I'm going to ask you if you agree or disagree with what, hopefully, we'll get on the screen here in a second.
MR. OHLEMEYER: Your Honor, I don't have any objection -- I do have an objection to the question. I also have an objection to the form. I don't think it's proper to put an unofficial record on the screen like this and ask the jury to read it. If he has a question he ought to ask the witness a question but we shouldn't be dragging things into court that aren't part of the record.
MR. MOTLEY: Well, wait a minute, Your Honor. We have a court reporter who is taking down the testimony. I don't know what he's talking about. We've asked

questions --
MR. OHLEMEYER: He knows exactly what I'm talking about, Your Honor.
MR. MOTLEY: No, I don't. I have no clue what he's talking about. I thought we had a court reporter who is reporting the transcript of this trial. Let me take it off the screen if there's a problem with this thing.
THE COURT: Why don't you read it, Counselor.
MR. MOTLEY: Your Honor, I will.
Q Dr. Bennett -- by the way, have you studied any of his publications on lung cancer?
A No, I haven't.
Q Have you ever heard of him before?
A Not before this case, no, sir. But I wouldn't expect to, though. I'm a chemist, I'm not a medical doctor.
Q I believe -- and he was talking about Mr. Butler, a barber. You know about Mr. Butler's case, too, don't you?
A I'm aware of a case with a --
Q You're more than aware of it. You're a witness in the case, aren't you?

A I'm aware of the case.
Q You know he was a barber who didn't smoke but the people in his barber shop smoked. You understand those are the allegations, don't you?
A Those are part of the allegations. I'm not sure if that wholly encapsulates them or not.
Q Dr. Bennett told the jury on Friday, "I believe Mr. Butler had a lung cancer. I believe it's an adenocarcinoma. And I believe, in my opinion, the pattern of secondhand smoking again is not the cause of his lung cancer. It is a risk factor." He told the jury.
You don't agree that, as you sit here

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today, Reynolds doesn't agree that people occupationally exposed at work who are nonsmokers for 25 or 30 years to environmental tobacco smoke, you're not willing to concede today that that is a risk factor for lung cancer, are you?

A Let me tell you what I've studied and let me tell you how it relates to the answer to your question.

Q Excuse me, sir, you have to answer --

MR. WAGNER: That is the answer. I think he's entitled to explain his answer.

MR. MOTLEY: He hasn't given an answer. When he gives an answer he can explain it. He hasn't given his answer.

THE COURT: The last question can be answered yes or no, Mr. Wagner.

Q You're not willing, RJ Reynolds, sitting in here today is not willing to look these folks on the jury in the eye and even admit that ETS is a risk factor for lung cancer in people who are exposed in the workplace, are they?

MR. WAGNER: Object to the argumentative nature and characterization of Counsel's question, Your Honor.

THE COURT: You may answer. Overruled.

A The answer is no, because I don't believe that's been scientifically established.

Q We're going to get into that.

Now, Dr. Ogden, RJ Reynolds is currently and has been interested in exploiting the general public's fear that

ETS has an effect upon human health, aren't they? Exploiting, commercially, make money, off the public's fears, aren't you?

A I don't understand your question.

Q You don't.

A No, sir.

Q You know what Premier and Eclipse are, don't you?

A Yes, I do.

Q Tell the ladies and gentlemen of the jury what Premier is.

A Premier is a cigarette that RJ Reynolds developed through the 1980s and test marketed in the late 1980s that had a number of design attributes, one of which included to simplify the chemistry of sidestream and mainstream smoke, to reduce the biological activity of cigarette smoke as it's measured in laboratory tests, and also to reduce the potential for annoyance due to ETS.

Q And tell them what Eclipse was.

A Well, Eclipse is a cigarette that is currently being test marketed by RJ Reynolds that in many ways is similar to Premier but, all in all, those are cigarettes that

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primarily heat tobacco rather than burning tobacco.
Q All right. And isn't RJ Reynolds launching and conducting a campaign in which you boast and try to sell this cigarette on the grounds that it has 90 percent less secondhand smoke?
A That is a claim that we make because that's what the science shows, yes, sir.
Q And you also -- you know that one of the issues in this case is whether or not the secondhand smoke in that hospital was so prevalent and persistent that they had to come and wash down the walls from all the nicotine stains and repaint it frequently because the nicotine was so bad in those rooms that it turned the paint different colors. You know that allegation from your reading of the deposition and affidavits, don't you?
A I do not recall hearing that, no, sir.
Q You don't recall -- you didn't consider the testimony of the gentleman who testified about having to repaint the walls because the nicotine stains were so great?

A I don't recall seeing that.
Q You don't recall that? Well, tell the ladies and gentlemen of the jury, doesn't your company brag and boast about Eclipse claiming that you don't have to -- no longer do you have to wash down the walls, no longer do you have to repaint the walls from nicotine stains because of that cigarette, don't you?
A I'm not aware of that ad campaign.
MR. MOTLEY: Your Honor, we move the introduction at this time of the Eclipse ad campaign. I'll hand Your Honor a copy of it.
THE COURT: Thank you. This is 79. You've had a chance to examine it, Mr. Furr?
MR. FURR: Are these ads that have been published, Mr. Motley?
MR. MOTLEY: Yes, sir.
MR. FURR: No objection, Your Honor.
THE COURT: 79 will be admitted.
(Plaintiffs' Exhibit(s) 79 received in evidence.)

Q First one I want to ask you about, Dr. Ogden, is the one that says, "Imagine a cigarette smoke that smells like this." It's got a picture of a bottle of water, it looks like, doesn't it?
A Let me find it.
Q It's the big one.

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A Okay. I see it.
Q You see the picture of the bottle of water; right?
A I do.
Q It says, right in the middle of the script it says, "With close to 90 percent less secondhand smoke." Doesn't it? Do you see that? Do you see right over by the pictures of the packs of cigarettes, the script?
A Oh, yeah, okay. I see that.
Q Third line down, "close to 90 percent less secondhand smoke"?
A That's right.
Q "There are no ashes and practically no stains on the walls and the windows." Don't they say that?
A It says that, yes.
Q Do you see the Eclipse, "A Whole New World

for Smokers" brochure, sir?
MR. MOTLEY: This is the multi-page one, ladies and gentlemen, right here, the smaller one. Does everybody have one?
Q On the second page it says, "Discover a new freedom to enjoy smoking." Do you have that, Dr. Ogden?
A Well, I'm trying to catch up with you on the text. You say it's on page 2?
Q Yes, sir. It says, "Discover a new freedom." Do you see that?
A No, I don't.
MR. MOTLEY: May I help him, Your Honor?
THE COURT: Go ahead.
MR. MOTLEY: Maybe it's on page 3, but does everyone see where I'm talking about here? "Discover." Yours were out of order.
Q It says, "90 percent less secondhand smoke"; correct?
A It says that, yes. It says, "Almost 90 percent less secondhand smoke."
Q "Almost 90." "No ashes. No lingering odor."

Are you familiar with the testimony in this case that Mildred Wiley had to change her clothes the minute she got home because of all the smoke smell?
A I read that, yes.
Q Well, here you're selling Eclipse so that people don't have to do that, don't you?
A That is one of the -- that is one of the messages being portrayed here, yes, sir.
Q "And practically no staining of walls, windows and curtains stay cleaner." You make that representation, doesn't your company?
A That's what it says, yes, sir.
Q Turn over now, please, if you don't mind, to the page that's got a picture of the sweater

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on it. It says, "Discover the difference." I won't tell you what page it is because my pages aren't numbered. Do you have that?

A Yes.

Q The picture of the sweater on it? Does everybody have this page?

It says, "After a few days, try wiping your TV or computer screen clear. You'll notice what a difference smoking Eclipse

makes. After a few days you'll see that there is practically no smoke buildup with Eclipse."

Now, what are we talking about here, no smoke buildup?

A Well, that means that there would not be the smoke particles that would have been attracted to a TV screen. TV screen is actually a pretty good collector of smoke particles because of the electrostatic charge on it.

Q You don't think human lungs are?

A You're asking me questions about this product versus what exposure may have been. Now --

Q Are you done?

A And I'm trying to answer your questions in that context.

Q Would you turn over, please, to the page that has the coffee cups in it and has -- it says, "My fiance is a nonsmoker." Do you see that, Dr. Ogden?

MR. MOTLEY: Can you folks see this?

A I do.

Q Somebody from Indiana is quoted as saying there was just no smoke lingering in the air. It was just unbelievable. Does your company make that representation about Eclipse versus regular cigarettes?

A Mr. Motley, I've not seen these before. If you represent that this is a published ad from the company, I would say, yes, that's what it says here.

Q Don't you know that with every pack of Eclipse that people buy they get their own little home video? Have you seen that?

A I have seen a video.

Q Well, are the representations in that video to sell Eclipse fair and accurate scientifically?

A It's been a number of years since I've seen that video, so I'm not sure I could characterize it that way or not. I certainly was not aware when I viewed it that there was anything that, in my research, would indicate that I would disagree with.

Q So you believe that video fairly and accurately represents the scientific

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difference between Eclipse and regular Camels, for example.

A Without reviewing the video again, I'm not sure I could answer that question globally.

MR. MOTLEY: Your Honor, we would move the admission of the video at this time to show the witness. I want to show it on the screen.

THE COURT: Mr. Furr, have you had a chance to review this?

MR. FURR: I would be happy to look at it over the break.

THE COURT: How long is it?

MR. MOTLEY: It's 15 minutes long. I can go to something else, wrap up one thing.

THE COURT: He can review it over the break.

Q Would you mind showing the next video clip, I believe it was the Odd Couple. I want to go back now to very small in the context of these movies. And ask you to look, or you can look at the big screen or your screen, whichever you prefer, sir.

This is from the Odd Couple. Do you

see the fan in the background?

Stop it, please.

Now, sir, that was about a ten-second clip. You could see the smoke in the air, could you not?

A I could see smoke coming off cigarettes, sure.

Q No, no. I'm not talking about coming off cigarettes. Could you not see it forming part of the background?

A No, I didn't see that. I'm sorry.

Q Back up, please.

Can you not see it in the background here, sir, the haze back there?

A I can't really, no. I can see it right around the table.

Q Okay. Go back to the first part of Odd Couple again, please. I'm going to freeze on something, and I'm going to ask you a question about it.

Stop. Too late. Back up just a little bit. Back up about two seconds. I want to show. Right there, stop it. Okay.

You saw the smoke that was coming off this man's cigarette. You still see some of

it; correct?

A Correct.

Q If someone were to be standing right over that person just like I'm doing right now, if you would see a hand right here holding that cigarette for that person, would you agree that that person located six to 12

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inches away from the rod itself would be receiving significant undiluted sidestream smoke?

A The position of a person close to that smoke plume, in general, they would have higher exposure than if they were further away. But as you can also see, the smoke is very concentrated in a plume, and that there would be areas of air around that that would be much less concentration.

Q But if you were right there, hovering over somebody, just like this, helping them smoke, holding the cigarette for them, you would get higher concentrations than if you were 12 feet away?

A In general, yes, that's true.

Q Roll the next video, please.

Have you ever seen this movie, Clean

and Sober? The man was nominated for an Academy Award for this.

A No, sir, I'm afraid I haven't.

Q This is an Alcoholics Anonymous movie. Can you see the haze in the background, sir?

A I saw what looked like haze, yes, sir.

Q He's saying thank you for not smoking?

A I didn't see that.

Q Well, we turned the sound down.

Now, have you ever been in a measured room about this size right here, where you would have 10 or 12 people in there all smoking at the same time?

A In what size, the whole size of this courtroom?

Q Let's say from right there to where the Judge's bench is, this wide.

A I probably have, yes, sir.

Q And isn't it a fact, sir, that the exposures in the '50s, '60s, '70s and up through the early '80s, was much more intense, the environmental tobacco smoke, or secondhand smoke, was much more intense than the '90s?

A I'm not sure I can testify to that in general. There certainly would be some

scenarios where there would be less ventilation, but that's -- I've been in rooms such as that where you can see smoke in the air, sure.

Q Do you remember testifying before the Occupational Safety and Health Administration, sir?

MR. FURR: What page?

MR. MOTLEY: Page 11401.

MR. FURR: 11401?

MR. MOTLEY: Yes, sir. Show it, please.

Q That is a copy of your testimony, is it not?

A It appears to be, yes.

Q "The typical smoking behavior in the public in the 1990s is much different than smoking

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behavior when these measurements were taken in the late '70s and early '80s."

Do you remember making that statement?

MR. FURR: Excuse me. I don't mean to interrupt, but I don't have that on page 11401. Are you certain that's the page?

MR. MOTLEY: I've got a copy of it right here. I don't know why it's not on that page.

Q Did you make such a statement, sir?
A I vaguely recall that. This does look like a transcript of my testimony. That's what it says, yes.
Q While measurements of the magnitude reported in these studies. Now you're referring to studies that were done, reporting smoke exposures in the '70s, late '70s and early '80s; right?
A I need to be technically accurate with you. These are not what I would call exposure studies. This was a comment based on a few measurements made by one scientist in bingo halls and things like that, of concentration.
Q Bingo halls where people, lots of people gather, right, and lots of people were smoking in the '70s; right?
A I can't attest to what happened in that particular study.
Q Well, you did here. You said measurements of the magnitude reported in those bingo studies are possible. They are far from being typical, at least in the '90s. Then you use these words. "These extreme values,

in other words, the bingo hall studies in the '70s, need to be viewed in the context in which they were generated, and also compared to modern day, realistic RSP concentrations in workplaces with and without smokers."

That was your testimony, was it not?

A Yes, sir, it sure is.
Q And the point you're making there is, that when you walk around with these things in the '90s, with less people smoking, with more smoking regulations, you are going to get less exposure concentrations than you would have gotten in the late '70s and early '80s; right?
A No, that's not my testimony.
Q That's not your testimony. So you're saying that back when people smoked more often, smoked in elevators, smoked in cars, smoked on airplanes, that the exposure would be the same as today when they can't do that; is that your testimony?
A No, that's not -- you're asking me about this testimony here?
Q I'm asking you a general question now.

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A No. You've mischaracterized my testimony here.
Q Were the levels that were reported at the bingo hall extreme values? Did you say that or not?
A Sure.
Q By extreme you meant high, didn't you?
A Yes.
Q All right. And isn't it a fact, sir, that back in the '60s and '70s more people smoked?
A I've never studied that. That's -- I'm not sure that is true.
Q You're not sure that's true?
A No, I'm not.
Q Do you know what percentage of the American public smokes today regularly, sir?
A Not exactly. I could guess.
Q Well, guess then.
A I would say 20 to 25 percent.
Q And don't you know that 50 percent of the American public smoked in the '60s?
A But I also know the population has increased, so you're asking me about number of people, you didn't ask me about percent.

Q So there's more people, and the fact that you only got 25 percent smoking, that's still the same number of smokers; is that your testimony?
A I'm saying it's possible. I'm trying to answer the question you've asked me.
Q All right. But won't you give me this, sir: That back in the '60s and '70s, people smoked on elevators sometimes; correct?
A I don't know.
Q You don't know?
A No. I presume that happened, sure.
Q What about airplanes? People smoked on airplanes back until the mid-'70s?
A Sure.
Q You've studied that, haven't you?
A We have, yes.
Q In fact, you and Dr. Jenkins followed one another, Jenkins first, you second, at the airline stewardesses' trial, didn't you?
A I don't know if he was right before me or not, but he testified and I testified, yes.
Q And you showed some of this equipment?
A I did.
Q In fact, you made basically the same

presentation with these pictures and all these little things right here, didn't you?
A Very similar, yes.
Q So this ain't the first time you've told this story, gave this testimony?
A In a courtroom? No. Second time.
MR. MOTLEY: Your Honor, would this

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be an appropriate time, sir?
THE COURT: I think we will take a break, Counselor.
We'll break for 15 minutes, ladies and gentlemen.
MR. MOTLEY: Judge, it's going to take 15 minutes to do the film.
THE COURT: We'll break for about 20 minutes because he needs to review that film.
(Standard admonition)
MR. CASSELL: All rise.
THE COURT: You can step down, Doctor. Thank you.
(A brief recess was taken.)
MR. CASSELL: All rise.
THE COURT: Be seated. Thank you. All right. Jury is not present.

Mr. Furr, did you get an opportunity to review?
MR. FURR: We did, Your Honor. Sorry it took so long.
THE COURT: That's all right.
MR. FURR: No one on this side of the room has any future as a technologist, I promise you. We did see it.
THE COURT: All right. Do you intend, Mr. Motley, to show that to the witness?
MR. MOTLEY: Yes, Your Honor.
THE COURT: Do you intend to offer it into evidence?
MR. MOTLEY: Yes, Your Honor.
THE COURT: It is marked, Counselor? It will be 80. Plaintiffs' 80. Is there an objection, Mr. Furr?
MR. FURR: We do not have an objection to the admission of the exhibit. Let me make sure I understand. Is the complete tape going to be shown to the witness? And we request, if he's going to be questioned about it, that it is, so that the statements contained in the tape can be

put into context.
MR. MOTLEY: No problem.
THE COURT: All right.
MR. MOTLEY: Judge, I have one other. It's not related to that.
THE COURT: Go ahead.
MR. MOTLEY: Your Honor, I would like to file with the Court an order entered on Saturday in the State of Minnesota litigation deprivileging some 39,000 documents on grounds of crime/fraud. I raise it at this point in time, Your Honor. There's an appeal that's been taken today to the Minnesota Court of Appeals. They were ordered over the weekend to file their papers by 4:30 today, with the State

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responding by 4:30 tomorrow. The reason I bring it up to Your Honor is two-fold.

We, obviously, are not seeking 39,000 documents in the middle of this trial. However, if those -- any of those 39,000 documents deal with the subject matter of environmental tobacco smoke, and if that order is affirmed and those documents are released, we move now, before this Court,

that any of those documents, once the Court of Appeals has ruled, if they affirm the trial court's ruling, that any of those documents that deal with the following two categories -- and Your Honor, we've talked about these orders before. They were required to categorize these. One of the categories is science. Another category deals with public health matters. I don't know exactly what the -- what the label of it is.

But to the extent that any of the documents relate to environmental tobacco smoke, secondhand smoke, sidestream smoke issues, and any of the documents relate to withholding scientific information from public health officials, we would like those, that discrete subset produced by these defendants to the extent, Your Honor, that the Court of Appeals affirms this ruling.

Obviously, some of them may bear on something -- some of them -- we haven't seen them, obviously. Neither has the State of Minnesota seen them. But some of them may

bear on these very issues that we're litigating here today. And I know it's the 11th hour, but we don't control when the Court makes these rulings, as Your Honor knows.

The Court's reviewed voluminous matters in regard to that case, and it may or may not be something that is relevant to this case, but if I didn't bring this to Your Honor's attention at the first possible moment, I think I would be remiss in giving Your Honor an opportunity to think about it. There may not be anything to think about. The Court of Appeals may decide on Wednesday to reverse.

THE COURT: All right. I'll show that preliminary discovery matter raised by Mr. Motley. The Court will take it under advisement until I hear further comment from Mr. Motley and from defense.

Are we ready to bring the jury in now?

MR. MOTLEY: Yes, Your Honor.

Your Honor, may I approach? This is the document we move the admission of. I want to give it to you before the jury comes

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in.
MR. CASSELL: All rise.
THE COURT: Be seated. Jury is back together with all three alternates.
Dr. Ogden here?
MR. FURR: Yes, he is, Your Honor.
THE COURT: State your name again for the record, please.
THE WITNESS: Michael Wayne Ogden.
THE COURT: Ladies and gentlemen, at the break there was an issue regarding a videotape. I have marked Plaintiffs' Exhibit 80, and the defense has had an opportunity to review that. They have no objections to its admission. I will order it admitted into evidence in this matter.
(Plaintiffs' Exhibit(s) 80 received in evidence.)
MR. MOTLEY: Before we show that, Your Honor, may I ask a few foundational questions?
THE COURT: You may.
BY MR. MOTLEY:
Q Dr. Ogden, isn't it a fact, to your personal knowledge, that neither Premier nor Eclipse

was ever offered for sale in the Muncie, Indiana area?
A My understanding is that that's true for Eclipse. I'm not sure about Premier.
Q Eclipse -- the film that we're about to see was about Eclipse. That was never offered for sale here; is that correct?
A As far as I know, that's true.
Q And are you familiar with this release by RJ Reynolds in 1987? You were with the company then; correct?
A 1987, yes.
Q This was a release that was put out with respect to Premier. Are you familiar with that?
A No, I'm not.
Q You know that publicity was had about Premier cigarettes; correct?
A Sure.
MR. MOTLEY: Your Honor, we move the admission of the next number of this release.
THE COURT: It will be 81. Any objection, Mr. Furr?
MR. FURR: I just got it. I'm

looking at it, Your Honor. It's several pages. I'll look at it as quickly as I can.
No objection.
THE COURT: 81 will be admitted.
(Plaintiffs' Exhibit(s) 81 received in evidence.)
BY MR. MOTLEY:

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Q Dr. Ogden, would you kindly look at page 2 of the document.
A All right.
Q This was about Premier; correct?
A Well, I haven't read it. Do you want me to read the whole thing?
Q You do know that Premier was announced in 1987; correct?
A About that time frame. I don't know exactly when.
Q Okay. On page 2, it says, "The cigarette is based on new technology that heats rather than burns tobacco to provide smokers with tobacco taste and satisfaction Premier looks like and smokes like other cigarettes --" on page 1, I'm sorry -- "but produces no ash Premier virtually no sidestream smoke after the first few puffs." On page 1.

So does that sound like Premier to you?
A It sounds like Premier, yes, sir.
Q Okay. On page 2. "'Since the tobacco does not burn, a majority of the compounds produced by burning tobacco are eliminated or greatly reduced, including most compounds that are often associated with the smoking and health controversy,' said Edward A. Horrigan, Vice Chairman of RJR Nabisco and Chief Executive Officer of RJ Reynolds Tobacco Company."
Did I Premier correctly?
A Yes, sir.
Q In fact, sir, when you tested Premier, you found that the so-called biological activity in sidestream and mainstream smoke was markedly reduced; correct?
A That was one of the design attributes and that was one of the findings, yes.
Q And then the chairman says, "Simply put, we think this, Premier, will be the world's cleanest cigarette," didn't they?
A That's what this says, yes.
Q Does that mean Camels and Winstons that you currently sell are dirty?

A That's not a characterization I would make, but that says cleanest.
Q Well, are Camels and Winstons that were sold in the '70s and '80s safe for human use?
A That's not a question I can answer as a chemist; I don't know.
Q You don't know whether they're safe for human use?
A That's not a question I've ever studied.
Q Let me ask you this: Do they contain chemicals that are carcinogens, the smoke of Camels and Winstons that were sold in the '70s and '80s?
A When you say "carcinogen"?
Q Things that cause cancer in animals?
A Sure. Carcinogenicity means -- is not an

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inherent property of a chemical. If you mean are there any chemicals in there that caused any tumor in any laboratory animal at any concentration by Premier of administration, the answer is yes.

MR. MOTLEY: Okay. Your Honor, I'd now show the container that the promotional film comes in first, and then we'll show the film.

THE COURT: All right.

Q Can you see that, Doctor?

MR. MOTLEY: And folks, can you see that?

Q It says that the cigarette, when smoked, it disappears like this. Do you see that?

A I do, yes.

Q Does that mean that regular Camels' and Winstons' smoke doesn't disappear like that?

A That would be the implication from the ad, yes.

MR. MOTLEY: Will you show the film, please.

(Videotape shown)

BY MR. MOTLEY:

Q Dr. Ogden, does RJ Reynolds agree with the Surgeon General's warning that you just showed in that film you produced?

A RJ Reynolds complies with all laws that require the label.

Q No, sir. I asked you --

MR. MOTLEY: Can you show that, please, the last Surgeon General's warning, what was last seen. Right there.

Q "Surgeon General's warning: Smoking causes

lung cancer."

Does RJ Reynolds agree with that statement of the Surgeon General?

A As it's worded, I would say no.

Q Heart disease?

A Well, the only word that I think I would disagree with as a scientist and the company would agree with would be cause.

Q The word "cause"?

A If you would replace that with risk factor, and I think we would be okay.

Q Thank you.

MR. MOTLEY: Would you take that down, please.

Q Has Reynolds ever done a film like this 15-minute film we just saw educating children in America about the hazards of smoking cigarettes?

A I don't know.

Q Did you see the comment by one of the Premier smokers that it's great because we don't have to paint the walls every year because they're getting yellow? Did you see that?

A I saw that, yes.

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Q Is that true? Is it true that Premier prevents people from having to paint the walls from nicotine buildup?
A I don't know that. I've known a lot of smokers who don't repaint their house every year. There may be some that do. I can't attest to that.
Q Well, Reynolds thought enough of that to put it in the tape, didn't they?
A You have to understand, this is an advertisement. This is a product that's developed and is advertised to address wishes and wants of customers of a consumer product company. That, obviously, is a wish or want of that customer.
Q Well, you thought enough of that customer's comment about not having to paint their house from the nicotine stains to put it in that 15-minute promotional film, didn't you, your company?
A It's in there, so yes, they did think highly of it. I assume that means that there were other smokers that shared that desire in a cigarette development.
Q Now, the film was made in 1995. You

understand Mrs. Wiley died in 1991.
A That's my understanding, yes.
Q Are you aware, sir, that in 19 -- way back in 1976, RJ Reynolds was studying the Premier product -- the Premier product, products that would heat rather than burn tobacco?
A I don't know when it started. I wasn't with the company at that time, so I don't know what they might have been doing in product development in 1976.
Q Well, but you told the jury that when you got to the company, you went back and reviewed historical files, and indeed you testified about things in the early '80s here this morning, didn't you?
A About ETS, not about product development.
Q Well, wouldn't the creation of a cigarette that heats rather than burns cut down on sidestream smoke?
A It does, yes. We've shown that.
Q So that's an aspect of ETS, isn't it? You told us that part of ETS is sidestream smoke?
A Well, when I joined the company, I was

certainly aware that product development was going on for what became known as Premier. I knew that it had been going on for some time. You asked me if I knew it was in 1976, and my answer was simply no, I don't know when it was.
Q First of all, this is a document 26414

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that's in evidence, sir. Would you confirm that this is an RJ Reynolds document that's dated 1976 and discusses heating tobacco rather than burning it?

A Yes, it appears to be an RJR document and it's dated March 5, 1976.

MR. MOTLEY: Your Honor, Exhibit 26 --

Q Are you familiar with Exhibit 14398 that's in evidence, Dr. Ogden?

A No, I'm not.

MR. MOTLEY: Your Honor, this is already in evidence, but I want to ask the witness about it, if I may.

THE COURT: All right.

MR. FURR: What number is that?

MR. MOTLEY: 14398. Do you need me to get you a copy of it?

MR. FURR: I've got a copy.

Q Do you have a copy up there, Doctor?

A 14398?

Q Yes.

A Yes.

Q You know who Alan Rodgman was at the time? You've known him, haven't you?

A Yes, I know who he is.

Q He's a senior scientist with RJ Reynolds?

A He's retired now but, yes, he was a senior scientist.

Q Are you aware that he reported to senior management, this Dr. Rodgman, who wrote this document in 1976, 14 years earlier, in 1962 Dr. Rodgman told senior management of RJ Reynolds that the evidence to indict cigarette smoking as a cause of lung cancer was overwhelming. Are you aware of that?

A I'm not aware of that, no.

Q Now, would you kindly tell the ladies and gentlemen of the jury what hydrogen cyanide is?

A It's a chemical.

Q What does it do to you?

A At high concentrations, it's generally

perceived to be a poison.

Q Well, it's more than a poison, isn't it? Don't they use that for executions?

A They do, right.

Q Hydrogen cyanide? Sir?

A They do, yes.

Q So in gas chambers they use hydrogen cyanide, don't they, some of them?

A Yes.

Q Look at page 21, please, ladies and gentlemen, and Doctor.

Down at the bottom under C, do you see a discussion of hydrogen cyanide?

A Yes, I do.

Q And then do you see a discussion of a TLV?

A Uh-hum.

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Q Tell the ladies and gentlemen of the jury what a TLV was. I think we call them PELs now, but what a TLV was.
A I'm sorry. What it was?
Q What is a TLV?
A Okay. TLV is a regulatory term that's basically used to establish what the permissible exposure would be in an occupational setting. For example, as I

interpret this, this is probably an OSHA standard that says a worker could be exposed to 10 PPMs hydrogen cyanide all day every day for eight hours.
Q Okay. And then it says mainstream smoke from an average cigarette contains from 200 to 400, what's that term that's used there?
A I'm sorry, where are you reading?
Q The next paragraph. Page 22, the second paragraph.
A Uh-hum.
Q "The mainstream smoke from an average cigarette contains from 200 to 400," then what's that little term mean?
A Micrograms.
Q "Of hydrogen cyanide."
A Right.
Q "If a ten-puff cigarette is assumed with 35 milliliters of puff, then the hydrogen cyanide concentration per milliliter is 570 to 1,140 NGs" -- is what again now?
A NG is nanograms.
Q Okay. So he is saying that mainstream smoke contains hydrogen cyanide; correct?
A Sure, yes.

Q And then he says "Sidestream smoke contains even higher levels per cigarette"; correct?
A Right.
Q Then down at the bottom under hydrogen sulfide -- what is hydrogen sulfide?
A Again, it's just a chemical. I'm not sure what it's used for.
Q It says, "The public generally identifies hydrogen sulfide with the odor of rotten eggs."
A Right.
Q "Most don't realize," that means the public doesn't realize; right? Is that correct, most don't realize.
A It says most, I don't know what he meant by that.
Q "That the toxicity of hydrogen sulfide as in its TLV is the same 10 parts per million as hydrogen cyanide. 10 parts per million of hydrogen sulfide is about 14 nanograms per milliliter. Its level in cigarette mainstream smoke is slightly less than that of hydrogen cyanide. If a ten-puff cigarette is assumed with 35 milliliters puffed, then the hydrogen sulfide is 140 to

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280 nanograms per milliliter, the levels in sidestream smoke are also higher than those in mainstream smoke." I read that correctly; right?

A You did, yes.

Q Is that information that you were aware of?

A In general, yes, but not those exact numbers.

Q And, again, going back to someone standing right -- right there, six inches from the face of a smoker holding the smoke -- holding the cigarette, the hydrogen cyanide and hydrogen sulfide that such a person would get would be greater than if they were as far away as you are from this hypothetical cigarette being smoked; correct?

A I lost you in the question. Sorry. Ask me it again. I lost track of where you were going.

Q I've got a person standing over a human being, okay, holding the cigarette for them, okay. All right? You're aware that testimony in this case is that Mildred Wiley from time to time had to smoke patients;

right?

MR. OHLEMEYER: Your Honor, I object to that. I'm not sure that is the testimony. That's Mr. Motley's characterization.

MR. MOTLEY: It's in evidence, and I'll be glad to show it to you chapter and verse.

MR. OHLEMEYER: I think it's argumentative. It's something the jury will have to decide.

THE COURT: Overruled. Go ahead.

MR. MOTLEY: I'll be happy to get chapter and verse. You just assume for a second. I'll have Mr. Howard find the testimony.

A You asked me a question. You want me to answer your question?

Q Let me start over again. That Mildred Wiley from time to time was holding a cigarette for a patient, okay, who was smoking?

A That is your representation?

Q I'm representing that, okay?

A Okay.

Q And that the person would smoke and smoke

would come out, and her face was within 12 inches, let's say, okay?

A That's your hypothetical, sure.

Q That smoke would have more hydrogen cyanide and more hydrogen sulfide in it than what you would breathe over there; right?

A Sure. That's generally the way exposure

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assessment and phenomenon work, yes. But that in no way relates to the question you were asking me previously. Was there a connection there I missed?

Q Now, are you, sir -- would you look on page 26 of that document that we've been talking about.

A Okay.

Q Do you see the second paragraph about Freon?

A In the top section?

Q Page 26, yes, sir.

A Uh-hum.

Q What is Freon 11?

A It's -- well, it's generally classified as a chlorofluorohydrocarbon. Freon are a class of compounds that are used in air conditioning systems, for example. I don't think this particular one is but --

Q "Only the RJR product contains a non-tobacco component, Freon 11, after processing. In the future, our use of Freon 11 and its residual level in tobacco may be attacked on the basis of health." What does that mean?

A I can read it just as you can. I'm not sure -- you're asking me to interpret what Dr. Rodgman meant 22 years ago?

Q I'm asking you whether RJ Reynolds' use of freon was ever attacked because of health consequences.

A I don't know.

MR. MOTLEY: Your Honor, we move the admission of Plaintiffs' Exhibit 82 against Reynolds at this time.

MR. CASSELL: The video was 80 and this is 82.

THE COURT: 82? Any objection, Mr. Furr?

MR. FURR: There is no foundation for the document yet. No foundation for its admission.

MR. MOTLEY: It's produced from RJ Reynolds' files, Your Honor. It's authored by Mr. Rodgman. I don't think there is any

question about its authenticity.

MR. FURR: I'm not arguing its authenticity.

MR. MOTLEY: It goes to environmental tobacco smoke right in the middle of it and I want to ask him about it.

THE COURT: Ask him about Rodgman. 82 will be admitted.

(Plaintiffs' Exhibit(s) 82 received in evidence.)

Q Now, sir, do you see that this -- oops.

MR. FURR: Your Honor, now that I've looked at it, it's an incomplete document also. There's a reference to an attachment that I wasn't provided, anyway.

MR. MOTLEY: Well, Your Honor, we

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can only give them what they produce to us.
THE COURT: Noted and overruled.
Go ahead, Counselor.
Q Sir, you spent a lot of time this morning talking about environmental tobacco smoke, smoke, and different factors that go into the equation of measuring exposure, didn't you?
A I did, yes.

Q Isn't it true that RJ Reynolds knew that the safety factor from environmental smoke exposure can be manipulated by appropriate selection of the room size?
A Are you asking me what this document says?
Q I'm asking you if RJ Reynolds knew that. Did you know that you could manipulate your measurements by the room size?
A Room size is an important factor in determining exposure. For example, if I smoke one cigarette in a small room versus one cigarette in a large room.
Q Right. And if you smoked 15 cigarettes in a small room, 15 different people smoking cigarettes in a small room, that's more significant than one person smoking in a room of about the size from this lady to that lady, isn't it?
A Maybe in general, but that's a little far stretch. You have to assume other things.
Q Who is Gray Robertson?
A Last I heard of Mr. Robertson, he was president of a consulting firm that made building investigations, indoor air quality investigations.

Q For who? What was the name of his companies? HBI?
A Healthy Buildings International, right.
Q Was that not a front group of RJ Reynolds and the Tobacco Institute, sir?
MR. WAGNER: Objection, your Honor, argumentative.
THE COURT: Sustained. Rephrase that.
Q Well, didn't the Tobacco Institute and RJ Reynolds, through the Tobacco Institute, control the activities of Gray Robertson?
A I have no knowledge of that.
Q Well, did Gray Robertson phony up data by manipulating the size of the rooms where he took exposure information?
MR. WAGNER: Objection, Your Honor, to this prejudicial characterization of testimony from somebody else outside this courtroom that this witness doesn't know anything about. I object to Mr. Motley's continued argumentative characterizations.
THE COURT: Do you want to rephrase the last.
MR. MOTLEY: All right.

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Q Are you aware, sir, that the Tobacco Institute used Gray Robertson as a star witness to testify about exposure measurements?
A I know that Mr. Robertson has testified and made scientific presentations. I don't know under whose request he made those presentations, no.
Q Don't you know that the Tobacco Institute privately admitted that Gray Robertson was not a scientist but he made a good witness?
MR. OHLEMEYER: Your Honor, I object to this. This is not argument. You can't ask a witness don't you know something when he doesn't know.
THE COURT: Sustained to the last. Sustained to the last.
MR. MOTLEY: Your Honor, I'm doing the foundation, whether he's seen these documents.
MR. WAGNER: Then he should proceed with foundational questions, Your Honor.
THE COURT: You can do your foundation, but sustained to the last.
Q Well, you told us you've looked at documents

related to environmental tobacco smoke that predated and postdated your being with the company; correct?
A That's correct.
Q Did you look at the file on Gray Robertson and Healthy Buildings International, including the report of Congress about his conduct?
MR. OHLEMEYER: Well --
MR. WAGNER: Judge, you know, the question should be --
THE COURT: He can answer that. That's a fair question.
MR. WAGNER: It presupposes there was a file.
THE COURT: I ruled on it.
MR. WAGNER: Sorry, Your Honor.
THE COURT: Go ahead.
A I don't know what file you're speaking of. If there were scientific measurements made by Mr. Robertson and his firm -- and I have reviewed those published documents and others -- I don't know what the file that you're speaking of is.
Q Well, you have, in fact, reviewed

Mr. Robertson's exposure data, haven't you?
A On occasion I've read papers published by scientists that work for him. I've heard him speak at least once at a scientific conference.
Q Well, let me ask you this, sir:
Mr. Robertson underwent media training,

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didn't he, so he would be a better witness?
MR. WAGNER: Judge, this is clearly outside the scope of direct examination.
MR. MOTLEY: No, it's not. It goes to bias, prejudice.
THE COURT: I'll overrule that.
If you know.
A I have no idea.
Q You did, didn't you?
A Sorry. What was the question?
Q Did you have media training about how to make presentations to lay people?
A I have had media training a time or two, yes, sir, when I was expected to speak with the media.
Q Well, you had media training about how to present evidence to, like the OSHA hearings, didn't you?

A I'm not sure when it was. There was some -- certainly we held practice sessions among scientists and listened to each other's presentations and critiqued those, yes.
Q And --
MR. MOTLEY: Excuse me one second, Your Honor. While they're looking at that, Your Honor, I'm going to come back to a question I asked him.
Q Sir, do you remember when I asked you the question -- this is -- while they're looking at that document -- this is the question about Millie Wiley smoking the patient. Do you remember I asked you that question?
A Yes, I do.
Q Let me show you the testimony in this trial.
MR. FURR: Your Honor, I object to the form of this.
MR. OHLEMEYER: May we approach for a moment, Your Honor?
(Bench discussion)
BY MR. MOTLEY:
Q Dr. Ogden, before I come to that document, do you remember I asked you the question about Mildred Wiley smoking the patients?

A I remember that question, yes.
Q This is from the testimony in this Court of Betty Jeffries before this jury. "I think you just told the jury that Mildred Wiley would smoke the patients. Why would you remember that?
"Answer: Well, I made the remark one time that that was probably the only time -- we always called her Millie -- the only time that Millie ever held a cigarette in her hand was when she was smoking the patients."
Now, does that refresh your memory, sir, of the affidavits and depositions you saw before you came in the courtroom that, in fact, there was testimony that Mildred Wiley smoked the patients?

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A Actually, I would say that's contrary to the depositions and affidavits I read from her co-workers that indicated she had not done that.

Q Let me ask you this: Do you see this page right there, highlighted right there?

MR. WAGNER: Judge, I'm going to object, because isn't that the transcript and the testimony in this case?

MR. MOTLEY: It is.

MR. WAGNER: Well, then, it's not relevant to anything that --

MR. FURR: I didn't ask him about that.

THE COURT: That issue, Counselor, whether or not he's seen that particular page is not really relevant.

MR. MOTLEY: All right.

Q Now, if we could go to the document.

MR. MOTLEY: Your Honor, we move the admission against Brown & Williamson at this time of Exhibit 9829.

THE COURT: Any objection, Counselor? Mr. Ohlemeyer?

MR. OHLEMEYER: Yes, Your Honor. No foundation for its use with this witness. It appears to discuss a meeting that didn't involve this witness.

MR. MOTLEY: Your Honor, this -- first place, they told us that this witness was here for all of the defendants, if you recall.

THE COURT: I recall.

MR. MOTLEY: And secondly, Your

Honor, they testified that this document relates to a meeting in which RJ Reynolds is discussed, it relates to the man that I just was asking him about, Mr. Gray Robertson, and it quotes from a statement made by RJ Reynolds with respect to Mr. Robertson, and this gentleman just said that he knew Mr. Robertson, that he relied on Mr. Robertson's data. That's a foundation for this document.

MR. OHLEMEYER: Your Honor --

MR. WAGNER: He didn't say that.

MR. OHLEMEYER: Your Honor, if I may.

THE COURT: Go ahead.

MR. OHLEMEYER: As a matter of procedure, the defendants who have been sued in this case aren't going to bring six witnesses to say the same thing. The fact that this man works at RJ Reynolds and has testimony that may be relevant to the issues the jury has to decide doesn't make every document admissible on his examination against any other company.

THE COURT: I generally agree with

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that.
MR. OHLEMEYER: This is not a matter that Mr. Motley has laid any foundation that this witness has any personal knowledge.
THE COURT: I disagree with that. 9829 will be admitted.
(Plaintiffs' Exhibit(s) 9829 received in evidence.)
MR. MOTLEY: I gave you a copy of that, didn't I?
MR. OHLEMEYER: Can we approach for a moment?
THE COURT: All right.
(Bench discussion)
THE COURT: 9829 is admitted and will be passed to the jury.

BY MR. MOTLEY:

Q Dr. Ogden, would you kindly look at the first page of these notes. Down at the bottom, the last two sentences, do you see mentioned -- and I know it's hard to read, but bear with me -- down at the very last two sentences, "The CIAR," do you see that, "noted that the CIAR --" are you on Bates

No. 42342, sir? Let me help you.

A I'm not sure what I'm looking at here. I'm having a tough time reading this.

Q I understand. This is not in evidence, so I'll show you right there, okay.

A I see CIAR, yes.

Q That's the Center for Indoor Air Research; correct?

A That's correct.

Q You are familiar with them; right?

A I am.

Q And it's funded by cigarette companies, including RJ Reynolds; correct?

A There are a number of corporate sponsors, many of which or many or most of which are cigarette companies.

Q How about all of which?

A I'm not sure.

Q You're not sure?

A No.

Q "The aim would apparently be to keep the unit quite separate from the Tobacco Institute and, therefore, give it more scientific credibility." Do you see that?

A I do see that, yes.

Q And, in fact, this 16 City study that you talked about and Dr. Jenkins, who was here last week discussed, was funded by the CIAR; correct?

A Yes, it was.

Q And the chairman of the CIAR was a scientist from Philip Morris, Dr. Thomas Osdene;

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right?
A Chairman of CIAR?
Q Yes.
A The executive director was not. I'm not sure who the chairman. Executive director is Dr. Max Isenberg.
Q The CIAR funded the 16 City study; right?
A Yes, they did.
Q The 16 City study was RJ Reynolds or maybe even your idea, wasn't it?
A I would characterize the inception of the idea as largely mine, yes.
Q So RJ Reynolds conceived of it, the CIAR, which is supported by industry, funded it, and Dr. Jenkins was selected to do the design of it, and RJ Reynolds evaluated the data; right?
A No, that's not true.

Q Did RJ Reynolds participate at all in the 16 City study?
A Yes, we did. And I don't see anything wrong with that. When you ask scientists to conceive ideas for study, who better to ask than the people who have done the most research in the field.
Q In that regard, sir, these things that you brought in here today, tell the ladies and gentlemen of the jury whether RJ Reynolds measured any environmental tobacco smoke in the 1960s.
A Not to my knowledge.
Q 1970s?
A We attempted to.
Q You did?
A Yes.
Q And do you have that data with you?
A There were no data that -- I mean, there is no report, formal reports that I'm aware of, because largely what we were trying to do was to use sampling equipment that people had developed for other purposes and, by and large, when you take those, at that point when you took them into restaurants and

whatnot you couldn't get any measurable results, it was too low to measure.
Q So in the 1970s, RJ Reynolds was concerned about secondhand smoke enough to try to measure it; is that right?
A Well, as I testified earlier, yes, we were aware of allegations, we were very knowledgeable about tobacco smoke and we wanted to apply our knowledge to ETS.
Q Did RJ Reynolds take any of these instruments into a hospital, into a smoke room in a hospital, before 1980?
A Not to my knowledge.
Q All right. So now, Reynolds, you, come up with the idea, you hire Dr. Jenkins from Oak Ridge National Laboratory; right?

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A Well, I may object to the way you're characterizing this. We just didn't come up with an idea. This was a result of a study that we had just completed, which itself was a result of -- followed from several studies we had completed, so it seemed like the next logical step in trying to understand what typical exposures were in the U.S.
Q Okay. The fact of the matter is you hired

Dr. Jenkins.
A I wouldn't characterize it that way either.
Q Well, Dr. Jenkins' firm was retained as principal designer of the study; right?
A Sure. The way that it evolved was here's the magnitude of a study we're envisioning. Who has the resources and the scientific ability to carry out such a study? And Dr. Jenkins' name was on a very short list.
Q Lo and behold, you went to Dr. Jenkins whose company had gotten millions of dollars from the cigarette industry prior to Premier; correct?
A I can't testify to how many dollars Dr. Jenkins or Oak Ridge National Lab may have received.
Q And then Dr. Jenkins decided to use -- and I'm not asking you whether this was appropriate or inappropriate, I'm just asking you if this, in fact, happened. Dr. Jenkins then asked the Reynolds laboratory to do certain assessments; correct? Data assessments?
A No, that's not correct.
Q Well, did RJ Reynolds participate in the

study or not?
A Yes, clearly. And I've described to you our participation, but that did not involve data assessment.
Q All right. Well, let's get back to the document in question, sir, please, the effort here to keep the unit quite separate from the Tobacco Institute, therefore give it scientific credibility. Now, turn over to page -- the next page, if you don't mind, please, sir.
A Excuse me. Does this document have a date? I'm searching to try to put it in context. I'm not finding --
Q Yes. 1988. It says the -- item No. 6, folks, on the second page. "The public relations committee at TAC have apparently been collaborating with Gray Robertson of ACVA."
You know that ACVA was the name that the Healthy Buildings International went under when it first started; right?
A I know they went under that name for a period of time. I don't know if that's the first --

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Q The same Gray Robertson, though; right?
A Sure, yes.
Q "Who has been used as a spokesman/expert witness by the United States tobacco industry." Do you see that?
A Uh-hum. Yes, I do.
Q And, in fact, Mr. Robertson -- he wasn't a doctor -- went all around the United States testifying for the tobacco companies that environmental tobacco smoke wasn't a problem; right?
A I don't have knowledge of that.
Q Well, it says, RJR. That's Reynolds, right?
A Yes.
Q Pointed out that although the abilities of Gray Robertson as a presenter, i.e., a witness; right?
A It says presenter here.
Q Well, what do you think he was presenting if he wasn't presenting evidence?
A Well, the first time I saw Mr. Robertson was at a scientific conference, and he made a scientific presentation. That wouldn't be a witness offering evidence, the way I would use the words.

Q Well, a presenter then, "are undeniable. This is not the case for his scientific abilities."
Do you see that?
A I do.
Q In other words, if the minutes of this meeting are correct, RJ Reynolds knew that Gray Robertson made a really good presentation but he wasn't much of a scientist; right?
A Those are your words, Mr. Motley. I don't see those here, and I can't say whether that's a view somebody held or not.
Q It says his abilities are undeniable as a presenter; right?
A That's what it says.
Q But the same can't be said of his abilities as a scientist. Isn't that what it says?
A I can say that about many people I met in science.
Q What, that they're not much of a scientist but they make a good witness?
A That's not what I said. You said "presenter." I used "presenter" in terms of the scientific context.

Q Well, Reynolds is using, through the Tobacco Institute, Gray Robertson to go around the country and make presentations about environmental tobacco smoke in the '80s; right?
A You're asking me -- I don't have independent knowledge of that. I don't know that.

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Q Well, what about -- are you aware of a congressional investigation of Mr. Robertson and the data that he was supplying to you at RJ Reynolds and to the public?
A When you say me, you mean me as -- in my scientific work?
Q Yes, sir. Are you aware that Mr. Robertson was investigated by congressional committee?
A Yes, and cleared of all allegations, as I understand it.
Q Well, cleared of all allegations. Give me the report, please.
MR. WAGNER: Judge, aren't we getting a little far afield here about matters that are clearly beyond the scope of direct examination?
THE COURT: Sounds like it.
MR. WAGNER: Can we get into

something that's relevant here? I object on that grounds, Your Honor.
MR. MOTLEY: I'm sorry, Your Honor --
MR. WAGNER: I make a formal objection on that ground.
MR. MOTLEY: I didn't hear the objection.
THE COURT: Sustained. If you want to ask him whether or not documents were presented to him or material presented to him that there was a question about, you can do that, but I don't think it's relevant, the report, Counsel.
MR. MOTLEY: Can I just ask him if he's seen that?
THE COURT: Go ahead and ask him if he's seen it.
Q Have you seen the Staff Report of the Majority Staff Subcommittee of Congress on Health and the Environment dated December 20, 1994 about environmental tobacco smoke?
A No, I have not. I'm sorry. It was a congressional? What did you say?
Q Yes.

A No, I've not seen it.
Q Is Winston a cigarette sold by RJ Reynolds?
A Yes, it is.
Q Do you know what additives are?
A As a general concept in a consumer product, sure, I know what additives are.
Q I'm talking about a cigarette. Do you know that RJ Reynolds adds chemicals to natural tobacco, don't you?
A There are some additives to some cigarettes. Winston is currently marketed as a no additive cigarette.
Q As no additives; right?
A Right.
Q That's not true, is it?
A To my knowledge, that's true.

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Q Sir, don't you know that RJ Reynolds has additives in the paper and in the filter?
A I believe the ads reflect that, yes.
Q The ads say no additives, period; don't you know that?
A Well, I've seen some discussion of that. I believe I've seen where it says no additives to the tobacco.
Q Well, have you not seen where they say

Winston, No Bull, no additives, period?
A I have seen a number of ads. I don't know that I've looked at all the print on them. Advertising and marketing are not my field of expertise.
MR. MOTLEY: Your Honor, we move admission of the next number at this time.
THE COURT: This will be 83. Thank you.
Any objection, Mr. Furr?
MR. FURR: Just on the grounds of relevance, Your Honor. And I object to it being admitted during the testimony of this witness. It's totally unrelated to anything he testified to on direct examination.
THE COURT: Overruled. 83 will be admitted.
(Plaintiffs' Exhibit(s) 83 received in evidence.)
Q Now, sir, look at it. It says, "Never mess up an apology with an excuse."
Do you see that?
A I do.
Q Is RJ Reynolds apologizing to people for putting chemicals in cigarettes?

MR. WAGNER: Objection, Your Honor. It's argumentative to frame questions in that fashion.
THE COURT: I agree. Sustained.
MR. FURR: It's also misleading.
THE COURT: Sustained.
Q Well, what does this ad mean, "Never mess up an apology with an excuse" in reference to additives, sir.
A I have no idea.
Q You don't have any idea, okay. Do you see down at the bottom it says, "New Winston, No Additives"?
A I do.
Q You don't see anywhere on there that says no additives in the tobacco, do you?
A I don't see anything like that on here, no.
Q And you don't see anywhere on here where they say no additives in the tobacco, but additives, chemicals are added to the paper and the filter, do you?
A I don't see that, no.
MR. MOTLEY: Your Honor, would this be a convenient time to take the break?
THE COURT: I think we will. When

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you're done with those, ladies and gentlemen, you can pass them down.

We'll take the noon break. We'll start again at 1:00 p.m.

(Standard admonition)

THE COURT: See you at 1:00.

Doctor, you may step down.

MR. CASSELL: All rise.

(A lunch recess was taken.)

MR. CASSELL: All rise.

THE COURT: Be seated. Jury back in its entirety, together with the alternates.

Doctor?

MR. OHLEMEYER: May we approach for a moment, Your Honor?

(Bench discussion)

THE COURT: State your name again for the jury, please.

THE WITNESS: Michael Wayne Ogden.

THE COURT: Mr. Motley.

MR. MOTLEY: Yes, sir.

BY MR. MOTLEY:

Q Dr. Ogden, this document was produced in the Wiley case, and you see it says, "Human

Studies on the Biological Activity of ETS" at the top?

A Right.

Q Okay. And it then discusses certain hypotheses that are proposed to be tested?

A Right.

MR. MOTLEY: Your Honor, we move 3285 into evidence. It was produced in this case.

THE COURT: Mr. Furr?

MR. FURR: I can't completely read mine. Who was this produced by?

MR. MOTLEY: RJ Reynolds.

MR. FURR: RJ Reynolds. One moment, Your Honor.

MR. MOTLEY: I believe it was produced in Mr. Wagner's office.

MR. FURR: No objections.

THE COURT: 3285 will be admitted. Go ahead, Counselor.

(Plaintiffs' Exhibit(s) 3285 received in evidence.)

Q Dr. Ogden, while they're passing that out, are you aware of studies that have been done where it has been claimed that asthmatic

children are adversely affected by secondhand smoke?

A General --

MR. FURR: Objection, relevance, Your Honor.

MR. MOTLEY: Your Honor, he's here from RJ Reynolds. He was about to answer

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the question. If he doesn't know, he's an R & D --

THE COURT: That doesn't make the question relevant.

MR. MOTLEY: I understand, Your Honor. He's in charge of R & D research. I think it's appropriate to ask him if he's aware of research dealing with ETS and kids. I'm not talking about marketing to kids. I'm talking about kids --

THE COURT: All right. He can answer that limited question.

MR. FURR: Your Honor, so that we don't become confused here, not to disparage Dr. Ogden's current role, he's not in charge of R & D research for RJ Reynolds.

THE COURT: I understand that. You can answer the question, Doctor.

A Can I ask you to rephrase?

Q I'll start over. Are you aware of studies that suggest that children, small children, who have asthma, already have asthma, when they have a parent that smokes in the home with a small child who already was born with asthma, that it makes it worse, makes his asthma worse?

A I've heard that hypothesis, that allegation, yes. I'm not aware of any research that Reynolds has done directly addressing asthma, per se.

Q Look at this document 3285, sir. Did RJ Reynolds do human experiments on children?

A Are you asking me in the context of this document or ever?

Q Yes, sir, I'm asking you -- in the middle of the page, it says, "We may use children from some end points in doing a study of smoke in the house." And then over on the second page, Item D, the last item on the second page, about filling out a detailed medical history questionnaire to evaluate their susceptibility to infections may be particularly important for the kids, for the

children.

A I'm not sure from what study this may have come from. I'm aware that we have investigated the potential of certain cigarette, new cigarette designs to affect asthma in children, yes.

Q Did you use the children and expose them to the smoke, sir?

A No. This was not a laboratory experiment. This was a -- well, again, I'm not sure what this document you've handed me is. You're asking me now the general familiarity question. And I would describe that experiment as one conducted by researchers outside of RJ Reynolds; that is, researchers at a medical facility, medical school, who

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recruited parents who were smokers that had children, and the parents were smokers, and looked at the incidence of asthma attacks when they smoked their usual brand versus whether they smoked a new cigarette under development.

Q What new cigarette? Might that have been, Premier or Eclipse?

A Eclipse, I believe.

Q And, in fact, was there less episodes of asthmatic outbursts when the parents smoked Eclipse versus say Camels or Marlboros?

A I'm not aware of the findings of that study. I've not seen any conclusions.

Q Have they been published?

A I'm not aware of having any seen any. I don't know that -- as far as I know, the research hasn't been completed. I'm not sure. That's not an experiment that I was in charge of or was principal investigator on, so I simply don't know.

Q Let me get this clear. RJ Reynolds wanted to test, with parents who had asthmatic children in their home, whether Eclipse would be less provocative or more provocative or equally as provocative of asthmatic attacks in those children. Is that fair?

A I wouldn't say quite that way, but basically to test if there was a difference in the incidence of asthma attacks.

Q All right. Now, this study that I have in -- the jury has, 3285 in front of them, the experimental design was to perform the

study in homes rather than at a laboratory. Then they had 100 spouse pairs, 50 both spouses are never smokers, 51 spouses are never smokers, other smokes one pack per day. And then you have a saliva test performed to verify smoking status. And then biological evaluation will be performed in all 200 individuals, smokers will serve as control, positive controls, may use children for some end points. What is an end point, sir?

A An end --

MR. FURR: Excuse me, Doctor. Your Honor, Dr. Ogden has attempted to respond generally about his knowledge of the study. He's indicated that he wasn't involved in the study, he doesn't have specific knowledge of the study, and I don't think it's proper just to read sections of this study and ask him questions about it.

THE COURT: I think the question was generally what the term "end point" means in research. You can tell us.

MR. MOTLEY: Yes, sir. That was the question, Judge. You said it better

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than I did.
A That's a question I can answer. An end point would be the result of any test. For example, the pumps that I showed and how to measure nicotine, the measure of nicotine in that sample would be the end point. Measuring, for example, the metabolite of nicotine in saliva in a smoker would be an end point. An end point could be an answer to the question. The end point could be the number of times a person blinks their eyes. It could be anything. It would be the result of making a test or an experiment.
Q Doctor, let me --
MR. MOTLEY: Do you have those ads?
Q -- return to where we were before lunch.
MR. MOTLEY: Plaintiff moves these advertisements into evidence against RJ Reynolds Tobacco only.
MR. WAGNER: Judge, we object to these. They don't have anything to do with the issues in this case. These ads weren't published until -- what's the date they were published?
THE COURT: How are they relevant,

Mr. Motley?
MR. MOTLEY: Your Honor, the issue of additives that was addressed in our case, that the use of additives in cigarettes promoted additional carcinogens in sidestream smoke. The fact that Reynolds is advertising Winston without additives proves that the cigarettes they sell that have additives in them are more likely dangerous than not.
MR. WAGNER: Thank you for the jury argument, but I move counsel's remarks be stricken, Your Honor.
MR. MOTLEY: Your Honor, you asked me to tell you what the relevance was.
THE COURT: The motion to strike is denied. He was responding to my question. These will be marked 84 and 85. They'll be admitted.
(Plaintiffs' Exhibit(s) 84 and 85 received in evidence.)
Q Let's look at the first one called, "Do The Math" first, Doctor.
A Okay.
Q Do you have that one?

MR. MOTLEY: Ladies and gentlemen, you have that one?
Q Have you looked at that while we were passing them out, by any chance?
A I see it.
Q Do you see it says yours, with, what do you call that, a what you call it? Asterisk.

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You see "yours" with an asterisk?
A I do.
Q
MR. WAGNER: Judge, just so I don't have to keep interrupting, can I have a continuing objection to this line of questioning on the grounds that these are 1988 ads, they have nothing to do with this case, they're outside the scope of this witness' direct examination, and they are irrelevant?
THE COURT: Al right. I'll show that as a continuing objection, Counselor.
Go ahead, Mr. Motley.
Q And down at the bottom of the ad, they have an asterisk and they explain what they mean. Do you see that?
A I do.

Q It says, "Laboratory analyses of the top ten United States non-menthol brand styles show all of their tobaccos contain a minimum of 6 percent additives on a dry weight basis."
Is that what it says; right?
A That's what it says.
Q Now, one of the top ten U.S. non-menthol brand styles is Camel, isn't it?
A You're asking me to testify about market share. I don't know. At one point it has been. I don't know whether it currently is or not.
Q Well, yours would also -- should mean ours if Camel was one of the top ten, wouldn't it? Yours and ours; would it be fair to say that?
A No. I mean, I'm not -- I'm not an advertising specialist. Yours would imply whatever cigarette you're smoking that is not Winston.
Q Okay.
A That's what it would say to me.
Q I see. That's fair. I can understand that. All right.
And this is trying to, would you say,

is trying to encourage smokers to switch to Winstons because it doesn't have additives in it?
A Again, I'm not an expert in advertising. I'm a consumer, like everyone else in the room is. The purpose, I would see in this advertising, is certainly to encourage brand switching, from Coke to Pepsi, from Marlboro to Winston, sure.
Q Now, the next one is called, "I want bull in my dog, not in my smokes."
What does that mean?
A I have no idea. I assume --
Q You don't recognize that that's an advertisement for the Georgia Bulldog football team?

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A I doubt it. There are not too many fans Georgia Bulldog fans around Winston-Salem.
Q That's right. From North Carolina I wouldn't expect to be boasting too much about the Bulldogs.
A I assume it meant as in bulldog, but I don't know if it's referring to Georgia.
Q Maybe they're referring to as additives as bull.

A Well, no, that's not the way I read it, but I'm sure you can read it one of many different ways.
MR. MOTLEY: Let me ask the witness to identify something, Your Honor, then I'll give a copy to --
THE COURT: All right.
Q This is an ad out of a magazine, sir, and I want to ask you if you see over here in the left a copyright?
A I do. Yes.
Q And a copyright of RJ Reynolds Tobacco Company?
A It says 199 --
Q Copyright?
A -- '8, I believe, RJ Reynolds Tobacco Company.
Q RJ Reynolds Tobacco Company. Do you recognize that as an ad for Winstons? Do you see Winstons?
A Well, let me see it. I haven't seen it before.
Q I'm sorry. Winston box.
A It would appear to be an ad for Winston, yes.

MR. MOTLEY: We move as the next number, Your Honor. I'll give counsel a copy of it.
THE COURT: Be 86.
MR. FURR: Is this on your exhibit list?
THE COURT: Any objection, Mr. Furr?
MR. MOTLEY: We had it listed on our exhibit list, yes, sir.
MR. WAGNER: While Mr. Furr is examining the document, Your Honor, I think I heard correctly it has a 1998 copyright on it; is that correct?
MR. MOTLEY: Yes, sir, same argument I made previously. It relates back --
MR. WAGNER: We would object at least on the ground of relevancy to any issues in this case, while Mr. Furr is examining the document, Your Honor.
THE COURT: Mr. Furr.
MR. FURR: No further objections. The same objection as Mr. Wagner with respect to this, though.

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THE COURT: I reviewed the document. It can be argued that it relates back. 86 will be admitted.

(Plaintiffs' Exhibit(s) 86 received in evidence.)

Q Dr. Ogden, 86 is a rather provocative ad, wouldn't you say?

A Rather, yes.

Q And it's a provocative ad that's put out by RJ Reynolds; correct?

A It's -- yes. It shows copyright RJR, and it's a Winston ad, sure.

Q It's pretty provocative, isn't it?

A Well, it's certainly eye catching.

Q What would you say that ad means before I show it to the jury?

A I'm not sure quite --

MR. FURR: I've got to object, asking this witness --

THE COURT: Sustained to the last.

MR. MOTLEY: I'll show it to the jury at this time, Your Honor.

THE COURT: All right. Go ahead. Mr. Cassell.

MR. MOTLEY: Your Honor, we move at

this time Exhibit 942 against BAT. Did I give Your Honor a copy? I'm sorry.

THE COURT: I have a copy.

MR. MOTLEY: And the immediate relevance, Your Honor -- what page is it?

Page 10, Your Honor.

MR. REYNOLDS: Your Honor, may I have an opportunity to look at this?

THE COURT: Certainly.

MR. REYNOLDS: I assume he means BAT Industries, when he says BAT. Of course, he's been instructed to use the right name.

THE COURT: You're moving this against BAT Industries and Brown & Williamson, Counselor?

MR. MOTLEY: Yes, I am, pursuant to Your Honor's previous ruling. I'm sorry. The pages have different numbers. This is page 10 at the bottom, page 9 at the top. And here's a limiting instruction.

THE COURT: All right. Thank you.

MR. MOTLEY: And I'm particularly referring to item D at the bottom of the very last paragraph, Judge.

THE COURT: All right.

Mr. Furr, any objection?

MR. OHLEMEYER: I do, Your Honor. May we approach?

THE COURT: Yes.

(Bench discussion)

THE COURT: Carry on, Mr. Motley.

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Q Dr. Ogden, isn't it a fact, sir, that Winston has created this No Bull campaign, this additives-free campaign, because they understand that consumers are afraid of not knowing what's in products that they take into their body?
A I can't testify to what the consumers might think. I'm not involved in market research as far as, or cigarette design, so I really -- I could only speculate and I prefer not to.
Q All right. Let me turn to another subject. Filters. Would you just broadly explain to the jury what a filter is with respect to cigarettes. You remember they showed that -- the Eclipse model, and it had a filter on there?
A Uh-hum.

Q Do you know what -- when you see the word filter, you know that some cigarettes have filters, like Winstons; right?
A Right.
Q Okay. And the purpose of that is to do what?
A I'll answer your question. I just want to make sure you understand that cigarette design is not my area of expertise.
Q I understand. Just generally. I'm not asking you for specific detail.
A A filter would be there generally to lower the tar, for example.
Q Okay. To lower the tar. Now, you indicated that environmental tobacco smoke, the mainstream component, is filtered through the smoker's lungs; right?
A I didn't say that.
Q Well, is that true?
A No. It's not true the way you've said it, I don't think.
Q Well, is some of the smoke that's exhaled filtered through the smoker's lungs?
A I'm hanging up on your characterization of "filtered through the smoker's lungs." I

don't think that's a fair characterization. Certainly, a part of environmental tobacco smoke is aged and diluted, exhaled mainstream smoke.
Q And are you saying that the process of it going through the lungs doesn't filter it to some extent?
A I don't know what you mean by filter. That suggests to me passing through. And that's not the way I would envision that characterization.
Q Well, none of the smoke that's exhaled from a smoker, which we saw in those movies, when they go like this, (indicating), are you saying none of that smoke that comes out of his mouth was in his lungs before it came

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out?
A No, I didn't say that. You said filtered through. I'm trying to envision how it got filtered through a lung. I can't envision that. So certainly it was inhaled. Then a portion of that was exhaled.
Q All right. Well, something happens to it. It's not the same smoke when it comes out as when it went in, is it?

A Generally not, no.
Q It's not. Okay. You agree with that?
A General principle, that's true, sure.
Q Okay. Have you ever heard of using lawyers as filters?
MR. FURR: Judge, objection, Your Honor. It's argumentative.
MR. MOTLEY: I'm asking a specific question from a specific document, and I'll connect it up.
MR. WAGNER: Well, Judge, we're off again doing what Your Honor, I thought, just ruled what wasn't going to be done. Now we're off on another document. It's argumentative.
THE COURT: Lawyers? Sustained.
Q Well, let me ask you this question, sir: Did the Tobacco Institute use lawyers -- RJ Reynolds is a member, did they use lawyers to try to create a controversy going about whether secondhand smoke killed people or not?
MR. WAGNER: Judge, please. This pejorative and characterizations and argument, argumentative form of question, I

object.
THE COURT: Why don't you rephrase that. Sustained. Rephrase the question.
Q Dr. Ogden, do you have any personal knowledge as to whether or not the Tobacco Institute used lawyers to create a controversy about whether secondhand smoke would injure people, yes or no?
A No, I don't.
Q You don't. Have you heard of a law firm called Covington & Burling?
MR. WAGNER: Judge, he just answered the question, saying he didn't, so I object to further questioning the witness about this subject. There's no foundation.
THE COURT: He can answer the last question.
Q You know that law firm, don't you?
A I've heard of the name, sure.
Q Well, you've worked with them, haven't you?
A I've met with maybe one or two people that may be associated with that firm, sure.
Q And what are their names?
A I'll have to think.
Q John Rupp?

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A I've met Mr. Rupp. And also an Ely, I believe is another name.
Q Clawson Ely?
A I believe so.
Q How do you spell that; do you know? My apologies to Mr. Ely. Let's spell it like it sounds, which ain't always true.
Now, Dr. Ogden, are you -- did you know a gentleman named Charles M. Harper called Mike, former CEO?
A Are you asking me if I know him? The answer is no.
Q You know who it is, don't you?
A I may have misstated, but I believe he's a former CEO of RJR Nabisco or something like that.
Q Okay. He was the chairman of RJR Nabisco in 1996, wasn't he?
A I'm not sure when.
Q Well, were you employed by RJR Tobacco in 1996?
A Yes. I was.
Q And you owned directly shares of stock or have stock options for a considerable amount of stock in RJR, don't you?

A I wouldn't call it considerable.
Q How many shares?
A I don't own any outright.
Q You own options, right?
A I own a few options.
Q What's a few?
A I'm guessing here, I would say in the neighbor of a thousand.
Q A thousand.
A Right.
Q Did you own shares of stock in RJR in 1996?
A As far as options?
Q Yes.
A Yes.
Q And did you own any stock outright?
A No, I don't.
Q Do you know Mr. Steven Goldstone?
A Not personally. I know who he is.
Q Did you know who Mr. James W. Johnston was in 1996?
A Yes.
Q And who was Mr. Johnston?
A Mr. Johnston was president of the RJR Tobacco in the U.S.
MR. MOTLEY: May I approach the

witness, Your Honor?
THE COURT: Yes.
Q Dr. Ogden, whether you attend them or not, you are aware, are you not, that there are annual meetings of shareholders held in Winston-Salem, usually?
A I'm aware that there are annual meetings.

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I'm not generally in Winston-Salem.
MR. FURR: Give us copies of what you have.
MR. MOTLEY: Sure.
Your Honor, we move the annual -- the transcript of the annual meeting of shareholders of RJR Nabisco against RJR Nabisco and RJ Reynolds Tobacco only at this time.
MR. WAGNER: Judge, what has this got to do with this witness' testimony?
MR. MOTLEY: I'm about to ask him -- I'm going to move the document in first, Judge. It's an official publication of the defendant in this case. It's got statements, and statements in here by the chairman of the board, which is what I'm going to ask him about in a moment that

deals with environmental tobacco smoke.
THE COURT: It will be marked 87, be marked Plaintiffs' 87, and on counsel's representation, subject to a motion to strike, I'll allow it.
87 will be admitted.
(Plaintiffs' Exhibit(s) 87 received in evidence.)
MR. MOTLEY: Your Honor, I'll give you -- we've marked it as 87.
THE COURT: Mr. Furr, I failed to ask, did you have another objection? I'm sorry.
MR. FURR: Not yet.
THE COURT: All right. Do you want to be heard?
MR. FURR: No. I join Mr. Wagner.
THE COURT: All right.
MR. MOTLEY: Do I proceed then, Your Honor?
THE COURT: Go ahead.
This is admitted, ladies and gentlemen, only against RJR Nabisco and RJR Tobacco Company.
MR. WAGNER: Judge, since selected

pages are being passed out to the jury, could we have those identified for us?
MR. MOTLEY: Sure. Page 60, 61, and 62, I believe.

Q And, Dr. Ogden, the question begins, that I want to ask you about, on page 58. Do you have that in mind, the question by Ms. Donley? And it's about environmental tobacco smoke.

A I see it, yes.

Q See that? Okay. All right. If you would, then, please, turn over to page 60.

A You're asking me to read this?

Q Well, you can. It essentially says, I'll be glad to read it, "There are so many illnesses --" this is a claim being made by

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a stockholder, you understand?
MR. WAGNER: Judge, can we approach?
THE COURT: All right. You can read that to yourself, Mr. Ogden.
(Bench discussion)
THE COURT: Go ahead, Mr. Motley.
MR. MOTLEY: Yes, sir.
Q Do you have the question in mind? Don't

read it out loud, sir, but to yourself. The question was asked on page 58. The Court asked you to read it yourself.
A I read it, yes.
Q And you know it has to do with environmental tobacco smoke and children; correct?
A It does.
Q Okay. Now, on page 60, I believe the ladies and gentlemen of the jury have page 60, at the bottom, the chairman of the board, Mr. Harper, "I will not restrict anybody's right to smoke. If the children don't like to be in a smoky room, and I wouldn't like to be, they'll leave. I don't know if you've got any grandchildren; I do. And if there is smoke around that's uncomfortable, they'll leave."
At some point -- then, "An infant cannot leave a room" is asked. Chairman says, "Okay. At some point they begin to crawl, okay? And then they begin to walk, and so on. Anyway, I guess that's enough said."
Now, sir, I want to ask you a question. Is it the current position of RJ Reynolds

Tobacco Company that it's okay for little children to be around cigarette smoke in a room?
MR. WAGNER: Judge, what does that have to do with what he read to the witness? It's irrelevant. Again, we're asking this witness questions about things that are far beyond the scope of his direct examination. We've been at this now for about two or three hours asking irrelevant questions.
MR. FURR: I think we're moving to strike now, Your Honor, since he hasn't tied it up.
THE COURT: Objection overruled. Motion to strike denied. You can answer the question.
A Can I ask you to restate it?
Q Yes, sir. Is it the current position of RJR Reynolds Tobacco Company that it's okay for little kids, babies, infants, to be in a smoke-filled room?
A No.
Q And if they didn't like the smoke, they can crawl away?
A I would say that's not --

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MR. WAGNER: Object to the argumentative nature of the question, too, Your Honor.
THE COURT: Rephrase.
Q Is it the position of RJ Reynolds Tobacco Company, today currently, sir, that it's okay for babies to be in room, a smoke-filled room, that they can crawl away?
A No, I would say that's not true.
THE COURT: You may pass that down, ladies and gentlemen.
MR. WAGNER: Judge, while we have this lull here, may I retrieve a copy of that so we can see what was passed to the jury?
THE COURT: Certainly.
MR. WAGNER: Can I have a copy? Thank you.
THE COURT: Plaintiffs' 87 was admitted, and for the record, the cover page along with page 60, 61, and 62 was exhibited for the jury.
Go ahead, Counselor.
Q Doctor, I want to try to get you out of here, so I'm going to ask just a few more

areas that you covered, if you don't mind.
Now, you told the jury about cigarette equivalents in your opening statement, did you not?
A I was asked some questions on it, yes, and I answered those.
Q And, in fact, you're aware that RJ Reynolds took out an advertisement discussing cigarette equivalents to the public in a way of trying to suggest that secondhand smoke was not dangerous, did they not?
MR. FURR: Objection, argumentative.
THE COURT: I think there was a couple different questions in there, Counselor.
Q First, are you aware that RJ Reynolds took out an advertisement across the country about secondhand smoke using cigarette equivalents?
A I'm aware that an ad was taken out. Whether it was across the country or -- I'm not sure, but certainly an ad was in some newspapers.
MR. FURR: Do you have one that we

can read the bottom of the ad? This is not legible at the bottom. It's very important the complete ad be looked at.
MR. MOTLEY: Well, my copies that were produced by your company, I'm sorry, if you can't read the bottom of them. I don't know what's on the bottom of it. I don't

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have a copy that you can read the bottom of it.

MR. FURR: We need to find one, Your Honor, because what's on the bottom of this is critical to understanding this ad.

MR. MOTLEY: Well, then I will withdraw it at this time, Your Honor, and assume counsel will produce it to us in this case, like they were supposed to have copied it so we could read the whole part of it.

THE COURT: Plaintiffs' 88 is withdrawn at this point pending securing a legible copy.

MR. MOTLEY: It's just the bottom part that is illegible, Your Honor.

Q Having just looked at that for foundation purposes, without getting into it, does that look like an ad that RJ Reynolds has taken

out?

A Yes, it does.

Q Now, Doctor, are you aware that Dr. Jenkins has been critical of using cigarette equivalents, the gentleman who preceded you on the witness stand?

A Yes, I am.

Q And are you aware, sir, that RJ Reynolds sponsored a study which was produced to us from their files sponsored by the Tobacco Institute where the authors of the study were very critical of using cigarette equivalents to explain the hazards of secondhand smoke?

A There were several questions wrapped up in that. I'm not --

Q You've adopted the Judge's ruling.

A Well, I'm trying to make sure I understand and answer the question you've asked. First you asked me was I aware that there was a file produced. I'm not -- I don't have any such awareness. Later you said about cigarette equivalents and the hazards from smoking that -- if you say that's their words, that's one thing. That's not what I

said. That's not my testimony.

Q I didn't say that you said that.

A That's what I was trying to clarify.

Q Do you know that there is a document produced by your company from your files that demonstrates that scientists that were paid in part by Reynolds said you shouldn't use cigarette equivalents because it's misleading?

A I'm not aware of such a file. I'm aware of the debate in the scientific literature, and the paper that I wrote, that I described earlier, I think adequately characterizes the way people feel about it.

MR. MOTLEY: Your Honor, we move into evidence Exhibit 3332 against Reynolds

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only.
THE COURT: Mr. Furr, any objection?
MR. FURR: Yes, we would object, Your Honor. It may well have been produced by Reynolds' files, but it's clearly not an RJ Reynolds document. It purports to be a report on a study commissioned by the Tobacco Institute. Merely because it came

out of Reynolds' files, doesn't make it admissible against Reynolds.
MR. MOTLEY: Your Honor, it's admissible on the issue of notice. And if you look at the last page of the document, Your Honor, which is Bates 0027, before the footnotes, the references, says "Acknowledgments: Supported by contract from the Tobacco Institute, Washington, D.C." And if for no other reason, it would be able to be used on cross-examination as a learned treatise.
THE COURT: 3332 will be admitted over objection.
(Plaintiffs' Exhibit(s) 3332 received in evidence.)
MR. MOTLEY: Here's a limiting instruction.
THE COURT: Thank you. This, ladies and gentlemen, is only admitted as to RJ Reynolds Tobacco Company only.
MR. FURR: Your Honor, I understand it's being admitted for the purpose of notice only.
MR. MOTLEY: I said it came from

their files, Your Honor. I said, if for no other reason, it should be admissible on the issue of notice.
THE COURT: No, that was not the limitation on it.
Q First, Doctor, would you confirm on Bates No. -- which are down at the -- ladies and gentlemen, down at the right bottom corner of the document, you'll see the nine-digit number, and that's the page numbers.
If you would, Dr. Ogden, please look at 0027, which is right before the footnotes.
A Okay.
Q The acknowledgment.
A Uh-hum.
Q "This work was supported by contract from the Tobacco Institute, Washington, D.C."
Do you see that; the last sentence of the acknowledgment?
A That's the last half of that sentence, yes.
Q Okay. And RJ Reynolds is a member of the Tobacco Institute, to your personal knowledge; correct?
A I assume so. I don't -- I'm not sure.
Q Now, please look at page No., pagination No.

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0016, which ladies and gentlemen, should be the second page of the document. The cover sheet should be the first full page. It starts out "Introduction."

If you would look to the next to last full paragraph that begins, "In addition," and ends "scientific basis."

MR. FURR: What page is this?

MR. MOTLEY: This is Bates No. 016.

Q Do you see the sentence, the last sentence in the paragraph that starts off, "In addition to the differences," it reads, "Consequently, estimation of ETS exposure in terms of cigarette equivalents is misleading and unjustified on a scientific basis."

A Let me read the rest of the paragraph, if I may, just to put in context.

Q Well, I'm asking you first, sir, you can read whatever you want, but right now I'm asking you if that sentence does, in fact, not say that?

MR. WAGNER: Judge, I think the witness is entitled to read enough of the --

THE COURT: He is. He is.

MR. WAGNER: Thank you.

MR. MOTLEY: But I think I'm entitled to an answer to that question. Then he can explain, Your Honor.

THE COURT: The question was, does that sentence say what Mr. Motley indicated.

A I was reading and not listening, but I trust your ability to read.

Q Listen and I'll read, how about that.

A That sounds pretty good.

Q "Consequently, estimation of ETS exposure in terms of cigarette equivalents is misleading and unjustified on a scientific basis."

Did those authors conclude that?

A They did. Well, that's what's written here, yes.

Q Okay. And you see up on -- and you understand that this was paid for in part by RJ Reynolds Tobacco?

A Well, you've asked me a couple of questions leading up to that. I read the acknowledgment about Tobacco Institute. Assuming that RJR is a member of that, then yes, you could imply that.

Q I'm sorry? Let me ask you a question, sir. Let me show you something. Read that to

yourself. Do you see that? Don't read it out loud. Read it to yourself.

A Starting with, "The introduction"?

Q No, sir.

A I thought that's what you indicated.

Q No, sir, right there. See that?

MR. FURR: Excuse me, are we still

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on the same document?
MR. MOTLEY: I'm still on the same document. I'm just asking him to look at something so he'll be more comfortable with what I'm about to ask.
Q Did you read that yourself?
A I read that.
Q Now, do you understand that that came from the files of RJ Reynolds?
A That would be the implication it would suggest, yes.
Q And did you see that document before you came in here and testified to this jury?
A No, I have not.
Q Doctor, do you know a Dr. Gaisch, G-A-I-S-C-H, Philip Morris-Europe?
A The name doesn't ring a bell, no.
Q Does RJ Reynolds claim that -- strike that.

My questions now are going to be in reference to this, this time period, okay, 1954 to 1991. Does RJ Reynolds claim that its products, cigarette products, Camels, Winston and the like, sold between 1954 and 1991, are not injurious to health?
A I don't know whether that claim has ever been made or not.
Q Well, as a member of R & D, do you stand here today and say cigarette products sold during that period of time are not injurious to human health?
A Human health and injury to health is not the expertise of an analytical chemist. If you want to draw back to the association with disease, relative risk, then there's certainly an association with disease. But I'm not sure of the specific question you're asking me.
Q Is a relative risk an injury?
A No. A relative risk is a statistical calculation.
Q So you don't -- you're saying you don't know whether the cigarettes sold from 1954 to 1991 were injurious to human health?

MR. WAGNER: Judge, this has all been gone into at least twice before. Asked and answered.
THE COURT: Not that specific question.
MR. WAGNER: But the same -- well, all right.
Q You just say you don't know?
A I don't know.
Q Do you believe that -- does RJ Reynolds Research Department believe that consumers have the right to expect a product sold to them that they take into their bodies to be safe?
A I'm not sure I could characterize it that way. I think we certainly recognize that

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the consumer has the right to the best cigarette product that we can manufacture, and I think we certainly deliver on that obligation.

Q Well, if cigarette smoking -- if the testimony in this case has been cigarette smoking causes 400,000 deaths every year, do you think that is consistent with being safe?

A I think it's consistent with making the best cigarette that we can make. We can address allegations of health concerns, and we've done that over the years.

Q Are you aware that in Canada, Camel --

MR. MOTLEY: Do you have that exhibit? May I stand here, Your Honor?

THE COURT: Go ahead.

MR. MOTLEY: This is, Your Honor, Exhibit No. 32.

THE COURT: All right.

Q Are you aware that 200 -- how far is Canada, Judge? If a bird were to take off right now and make it through the snow, how many miles would he travel before he hit the Canadian border; do you know?

A I have no idea.

Q 200 maybe?

A I don't --

Q You can tell I'm not from around here either. Tell us what that Canadian pack of Camels says?

MR. WAGNER: Judge, surely this has no relevancy to anything this witness has testified about, about what's done up in

Canada. I mean, what is the relevancy of this? I object, Your Honor. It's irrelevant, beyond the scope of direct examination by far.

MR. MOTLEY: It's in evidence, Your Honor.

MR. WAGNER: Well --

THE COURT: Overruled. Go ahead.

Q Sir, is that a pack of Camel cigarettes?

A Yes, it is.

Q Is that a brand manufactured by RJ Reynolds?

A Yes, it is.

Q And do you see that that Canadian pack of Camels says what? Read that for the record, please.

A You're talking about the black and white warning label?

Q The warning label, yes.

A It says, "Tobacco smoke causes fatal lung disease in nonsmokers."

Q Is that true or false?

A To the best of my knowledge and review of the scientific literature, I think that's an overstatement of what science shows, sure.

MR. MOTLEY: Your Honor, may I pass

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this to the jury?
THE COURT: Go ahead.
MR. WAGNER: Judge, that's been passed to the jury.
THE COURT: A lot of things have been passed, Counselor.
Q Dr. Ogden, would you --
MR. MOTLEY: This is in evidence, Your Honor. It's Plaintiffs' Exhibit 6147. It's 1968.
Q That's before you joined the company, but I just want to ask you one question about this document.
Do you see No. 2 on the first page?
A I do.
Q "Our basic position in the cigarette controversy is subject to the charge and may be subject to a finding that we are making false or misleading statements to promote the sale of cigarettes."
Do you see that, sir?
A I see that, yes.
Q Do you know what false and misleading statements that that document refers to?
A No, sir, I have no idea.

Q Sir, do you know that the Food and Drug Administration concluded in 1996 that your company had withheld --
MR. WAGNER: Objection, Your Honor. I'm going to object, Your Honor, to --
THE COURT: Sustained. Sustained.
Q Did you have anything to do, Dr. Ogden, with turning over documents to the Food and Drug Administration in 1994 and 1995?
MR. WAGNER: Object, Your Honor, same reason. Irrelevant.
MR. MOTLEY: It's in evidence, Your Honor. You allowed the Findings of Fact into evidence last week.
THE COURT: He can answer the last question yes or no.
A I don't know that I can answer it yes or no. L have not provided any documents specific to that, but certainly the company and the R & D departments are under document retaining orders from the variety of lawsuits, and we certainly comply with all of those. So it may be that some of my documents ended up there, but I have no idea.

Q You didn't have anything to do with delivering them or having them delivered?
A No, not at all.
Q Okay. Sir, my final question: The jury heard the testimony of Mr. Steven Goldstone. You know who he is; right?
A I know who he is, yes.

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Q Without you and I debating what main man means.
A Let's not do that.
Q I think you now know what I mean by that; right?
A Well, he's the head of RJR Nabisco.
Q Okay. Would you agree with Mr. Goldstone, the head of RJR Nabisco, that the twisting of scientific facts --
MR. WAGNER: Judge, I object again. It's improper to quiz a witness, interrogate a witness, about what some other witness said then ask him if he agrees with it.
MR. MOTLEY: It's not some other witness. It's the number one man at RJR Nabisco.
MR. WAGNER: It doesn't make any difference, Your Honor. It's improper.

THE COURT: I'll allow it. Go ahead.
Q -- that the twisting of scientific facts is unforgivable. Do you agree with that?
A Yes, I do.
MR. MOTLEY: Dr. Ogden, it's a pleasure to meet you, sir, and I hope you get out of here before the snow starts coming down.
THE WITNESS: So do I.
THE COURT: Thank you, Mr. Motley. Mr. Furr, redirect?
MR. FURR: Yes, Your Honor.

REDIRECT EXAMINATION
BY MR. FURR:
Q Dr. Ogden, are you a health scientist?
A No, sir, I'm not.
Q When is the last time that an employee in the RJ Reynolds Tobacco Company came to you and asked for your opinion on an issue involving smoking and health?
A I can't remember any time that's ever happened.
Q Do you consider yourself to hold expert opinions with respect to smoking and health,

including environmental tobacco smoke and health?
A Not -- not in the relationship to health, no, certainly not.
Q Are you a marketing expert, Dr. Ogden?
A No, I'm not.
Q Are you a cigarette design expert?
A No, sir.
Q You're a chemist; correct?
A Correct.
Q Dr. Ogden, you were asked a number of questions regarding the smoking and the generation of environmental tobacco smoke in different environments. Do you recall that?
A I do.
Q Dr. Ogden, to your knowledge, did Mrs. Wiley

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work in a piano bar?
A Nothing I reviewed indicated that she ever did, no.
Q To your knowledge, did Mrs. Wiley work in meetings of Alcoholics Anonymous?
A No. I don't recall any indication that she did.
Q To your knowledge, did Mrs. Wiley work on an airplane?

A Not to my knowledge, no.
Q To your knowledge, did Mrs. Wiley work in bingo halls?
A No, I don't recall seeing that.
Q To your knowledge, did Mrs. Wiley spend a considerable portion of her employment working in an elevator?
A No. I don't think so.
Q Let me hand you what's been marked as Defendants' Exhibit F1271, which is already in evidence, and ask you to a look at -- first let me ask you to identify what this document is and then ask you to read 5C to the jury.
A You asked me to identify it?
Q Please.
A It's a -- it's on letterhead, I guess, Veteran's Administration, Washington, D.C., to Directors, All Field Activities, Subject: Smoking Policy in VA Health Care Facilities, dated October 20, 1977.
Q Dated when?
A October 20, 1977.
Q And it's the VA smoking policy; correct?
A It would appear to be, yes.

Q Would you read to the jury 5C, please.
A 5C says, "Elevators: Smoking in elevator or carrying lighted smoking materials in an elevator is strictly prohibited. Signs and receptacles are located in elevator areas."
Q Dr. Ogden, Mr. Motley asked you a series of questions regarding smoking rates during the time period of the 1960s. Do you recall that?
A Yes, in general.
Q And what information do you have available to you with respect to what Mrs. Wiley's ETS exposure would have been in the 1960s?
MR. MOTLEY: Excuse me, Your Honor. May I have that question read back before he answers it.
THE COURT: All right. You can read that question back, ma'am.
(The requested material was read by the reporter.)
THE COURT: Is there an objection?
MR. MOTLEY: Your Honor, she was a missionary most of that time. I don't know what he's talking about now. I'm asking that there be a greater foundation or more

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specific question.
THE COURT: Objection is overruled.
You can answer that question.
A I'm trying to remember, looking at what I characterized as the physical evidence, and also reviewing the depositions and affidavits, the only thing I can recall that would be relevant to that would be the deposition of Mr. Wiley, who I believe said that prior to working at the VA Hospital, she had no ETS exposure.
Q Okay. Dr. Ogden, is RJ Reynolds Tobacco Company proud of the work that it has done in developing the new cigarette products, Eclipse and Premier?
A Yes, we are.
Q Dr. Ogden, what do you think Mr. Motley would be arguing here today if Reynolds had not developed new cigarette products like Eclipse and Premiere?
MR. MOTLEY: Objection, that's argumentative.
THE COURT: Sustained.
MR. MOTLEY: We have to argue about something.

MR. FURR: We know that.
Q Dr. Ogden, you were asked a lot of questions about active smoking and health; is that correct?
A I was, yes.
Q What is your understanding with respect to whether Mrs. Wiley was an active smoker?
A In all the reviewing of the testimonies and affidavits indicated that she had never smoked a cigarette.
Q You were asked a series of questions about hydrogen cyanide and mainstream and sidestream tobacco smoke. Do you recall that?
A I do, yes.
Q Dr. Ogden, to your knowledge, has hydrogen cyanide been measured in environmental tobacco smoke in real world environments?
A To my knowledge, no. It certainly does not meet the criteria of a good marker. But we have never measured it, and I'm not aware of any scientists certainly in the last 15 years that have measured it.
Q You were also asked about hydrogen sulfide; do you recall that?

A Yes, I do.
Q To your knowledge, has hydrogen sulfide ever been measured in environmental tobacco smoke in real world situations?
A Not that I can recall, no.
Q You were asked some questions about the 16 City study. Do you recall that?

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A I do.
Q And you were asked specifically about the selection of Dr. Roger Jenkins to be the principal investigator.
A Right.
Q Tell the jury why Dr. Jenkins was selected.
A Well, I wouldn't quite even characterize it as he was selected. I remember there were suggestions among scientists about the size and the type of study that ought to be done, and a general question was being discussed of who in the world could coordinate and do such a study. And I only remember one name coming up and that was Dr. Jenkins at Oak Ridge; that he had the experience and the facilities, the sport staff at Oak Ridge, statisticians, et cetera, to be able to do a study of that magnitude.

Q And when would the evaluation of who should be principal investigator of the 16 City study have been made?
A Certainly before the study began.
Q 1990?
A 199 -- I would say late '92, early '93, something like that.
Q When that decision was made, were you aware of the difference of opinion that you and Dr. Jenkins have with respect to the utility of using cigarette equivalents?
A Well, certainly he -- I was generally aware, yes. Even at that point of the, you know, some -- well, some difference of opinion among scientists as to how it should be used and how it should not be used.
Q And it didn't prevent the selection of Dr. Jenkins to head up the study, did it?
A Oh, no, certainly not.
Q You were asked some questions about whether or not RJ Reynolds had ever used any of the technology that you brought in here and demonstrated to the jury to measure environmental tobacco smoke during the 1960s and 1970s. Do you recall that?

A I do.
Q Was that technology available in the 1960s and 1970s?
A No. None of the technology that I showed that was specifically for measuring ETS concentrations or exposures, that was not available prior to the 1980s.
Q Dr. Ogden, how does the current marketing program for the Winston cigarette relate to Mrs. Wiley's environmental tobacco smoke exposures between 1973 and 1991?
A It's not obvious to me that it does relate.
MR. MOTLEY: Excuse me, Your Honor, can I have that again, the question?
(The requested material was read by the reporter.)

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MR. MOTLEY: Now he's trying to ask the witness to overrule Your Honor to a legal objection about the relevance of it.
MR. FURR: I asked him how he views it in his opinion.
THE COURT: Go ahead.
MR. MOTLEY: What I'm saying, Your Honor, is he's now asking this witness to make a judgment about relevancy of an item

of evidence that Your Honor has already overruled an objection to. Your Honor decides what's relevant; not him.
MR. FURR: Of course that's not what I'm asking, Your Honor. There's a number of issues in this case which evidence may be relevant. I'm asking this witness whether or not that evidence is relevant to what he came here to testify about today.
MR. MOTLEY: Well, I think that's for the jury to decide.
THE COURT: Make your question a little bit more specific.

Q Dr. Ogden, in reaching your opinions with respect to Mrs. Wiley's environmental tobacco smoke exposures between 1973 and 1991, how did you consider the Winston marketing program that's currently being run?

A I didn't because it's not relevant.

Q Dr. Ogden, you were asked some questions --
MR. MOTLEY: Objection. I believe, Your Honor, to the witness' statement of relevance. No, I'm just teasing. I don't care.

Q You were asked some questions about the Eclipse marketing program and whether or not smoking cigarettes indoors produces -- can produce staining of materials contained in a home. Do you recall that?

A Generally speaking, yes.

Q Is the fact that environmental tobacco smoke indoors can stain -- let me start again.
Does the fact that environmental tobacco smoke indoors can stain materials contained indoors change your opinions with respect to Mrs. Wiley's environmental tobacco smoke exposure?

A No. Because the issue is really exposure. The fact that a curtain may have gotten stained or a wall may have gotten stained after years of smoking in a home or wherever, doesn't change the scientific assessment of the physical evidence that, you know, that talks about number of smokers and how much smoke might have been in the air. So there's no way I can use a stain on the wall as a marker for ETS, for example. That's never been proposed and wouldn't work. It's not relevant there.

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Q Dr. Ogden, we saw some clips from Casablanca, the Odd Couple, and Clean and Sober. Do you recall that?
A I do, yes.
Q How did you consider that information as you developed your opinions with respect to Mrs. Wiley's environmental tobacco smoke exposure?
A Prior to coming in here today, I never considered them at all.
Q Has it changed your opinion?
A No, not at all.
Q Why not?
A Well, in any scenario, whether it's a smoky bar or Hollywood movie, certainly there are people, myself included, who have seen smoke in the air. That's not what I was trying to do in this case.

What I was trying to do was to put together in a scientific way the best available evidence that described her work environment and how many smokers there might have been, all the things I described earlier, how many cigarettes might have been smoked, put that in context with the

measurements that I had made over the last 10 or 12 years, and try to come to some understanding of how her exposure would compare to places where I have measured, and a Hollywood production doesn't help me do that.
Q Okay. Dr. Ogden, do you still have Plaintiffs' Exhibit 3285 up there?
A I'm sure I do.
Q Let me hand you mine. It will be quicker. You were asked some questions about that document, which I believe was described as at least a portion of the protocol for a study that was going to be conducted which would include the assessment of certain end points involving children. Do you recall that?
A I recall that, yes.
Q Did you testify that there was a medical school involved in performing that study?
A Well, again, I'm not sure exactly what study this relates to. I offered testimony in a generic fashion, that I was aware of a research study that was conducted by a medical school looking at asthmatic children

as one of the potential end points, yes.
Q Do you know what medical school that was?
A I do.
Q What was it?
A Tulane University.
Q Let me see if you can find Plaintiffs' Exhibit 3332, which was one of the last

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documents that Mr. Motley showed you.
A I've got it.
Q Now, Mr. Motley asked you some questions about certain statements contained in this document with respect to the utility of using cigarette equivalents to describe the environmental tobacco smoke exposure of nonsmokers. Do you recall that?
A I do, yes.
Q Does anything in this document change your opinions with respect to the utility of using cigarette equivalents?
A Well, I'm not sure whether I'm supposed to answer first and then explain or does it matter?
No, it doesn't. May I explain that a little bit?
Q Go ahead.

A Some of the concerns that are outlined here in 1986 are the very same concerns that I outlined in the paper that I published last year. So I'm certainly aware of that.
What I've done is to use my experience and my training to try to move cigarette equivalents forward, and basically to state what I believe, as a scientist, it's useful for and what it's not useful for.
And I've come to some of the same conclusions. It's not useful for everything, but as a way of conceptualizing exposure to non-scientists, it's -- as that paper shows, it's been used by over 40 scientists over the last 25 years, and it's still used today, so it has value, yes. But nothing here changes my opinion on cigarette equivalents.
Q Dr. Ogden, this document was produced, as Mr. Motley stated, by a contractor to the Tobacco Institute. Is that correct? That would be in the acknowledgment.
A That appears to be what the acknowledgment says, yes.
Q On the front page, is it stated as to whom

the actual scientists were and what their affiliations were that produced this document?
A There are four scientists -- yes, there are four scientists listed here.
Q Would you tell the jury who those people are.
A You just want names or affiliations?
Q Names and affiliations.
A Nancy Balter, Ph.D., Department of Biology, Georgetown University, Washington, D.C.; S. James Kilpatrick, Ph.D., Department of Biostatistics, Medical College of Virginia, Richmond, Virginia; Philip Witorsch, M.D., Department of Medicine, George Washington University, Washington D.C.; Sorell L.

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Schwartz, Ph.D., Department of Pharmacology, Georgetown University, Washington, D.C.

Q Okay. What's the title of this document?

A "Causal Relationship Between Environmental Tobacco Smoke and Lung Cancer in Nonsmokers: A Critical Review of the Literature."

Q Would you take a look at the bottom of the cover page.

A I see that.

Q And tell us the date that appears.

A Well, it says final version submitted April 11, 1986.

Q And below that it says "Tentatively accepted for publication in the Journal of the Air Pollution Control Association." Do you see that?

A I do.

Q What do you understand that to mean?

A That "tentatively" throws me off there. But generally, that would suggest to me that it either has been approved or very nearly approved for publication in that journal.

Q Now I'd like for you to turn to the last page of the text of this article.

A Okay.

Q See the conclusion section?

A I do.

Q Read that conclusion, then I want to ask you a question, okay?

A Want me to read it to myself?

Q No. I'll read it to you first. "The epidemiologic data concerning any cause and effect relationship between ETS and lung cancer is at best equivocal. The most

persistent weakness is the absence of adequate exposure information. This precludes the evaluation of dose-response relationships, a critical element of the test for causality. Moreover, problems of sampling bias and misclassification complicate interpretation of studies done today."

See that there?

A I do, yes.

Q Did I read that correctly, Dr. Ogden?

A Yes, you did.

MR. FURR: Thank you. That's all I have, Your Honor.

THE COURT: Thank you, Mr. Furr. Mr. Motley, recross.

MR. MOTLEY: Briefly, Your Honor.

RECROSS-EXAMINATION

BY MR. MOTLEY:

Q Sir, on this issue of relevance, don't you think, sir, that if there's an issue in this case about what's in smoke that people breathe environmentally, what's in it, what it's composed of, that whether or not cigarettes have additives in it is important

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to understand at least one aspect of what's in the smoke?
A You're asking me is that relevant to gauging what the exposure might have been at the VA Hospital?
Q Let's do it this way. Are you aware that -- I'll just ask you to assume the testimony in this case that cocoa and licorice are contained as additives in many cigarettes. Are you aware of that?
A Cocoa, yes. I'm not sure about licorice.
Q Then if you're sure about cocoa, when cocoa is heated up to 1,000 degrees Fahrenheit, it gives off carcinogens; are you aware of that?
A I'm not surprised by that.
Q You're not. Don't you think if your cigarettes had cocoa in it before this No Bull campaign came up, that it's relevant to whether cocoa let's off carcinogens or not?
A No, sir, I don't see how it is.
Q You don't see that relevance?
A No, I don't.
Q Okay. Now, with respect to Mr. Wiley's testimony, did you look at his trial

transcript, sir?
A No, I didn't.
Q You don't know what he said in this trial, do you?
A No, sir.
Q Are you unaware, sir, that then, I take it, that he testified that Mrs. Wiley was exposed to smoke in various hospitals before she got to the VA?
MR. FURR: Your Honor, I don't have an objection to the question, but I do think the jury should be instructed it would have been improper for Dr. Ogden to --
MR. MOTLEY: Your Honor, I'm not suggesting --
MR. FURR: Let's make sure everyone is clear on that.
MR. MOTLEY: I'm not suggesting, Your Honor, it was improper.
THE COURT: All right.
Q But you just don't know that Mr. Wiley sat down here as the first witness and told the jury that his wife was exposed from the whole time he knew her to cigarette smoking in hospitals, do you?

MR. WAGNER: That's an improper characterization of that testimony, Your Honor. I object.
MR. MOTLEY: I have it right here. I have it right here.
MR. WAGNER: I can almost recite the question and the answer from memory,

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Your Honor.
THE COURT: Make your question specific, Mr. Motley.
MR. MOTLEY: I will.
Q That Mr. Wiley was asked on those occasions in all those other hospitals -- all those other hospitals, right here in this room --
MR. WAGNER: Judge, I object to the phrasing of the question. Just read the question to him.
THE COURT: Go ahead.
Q All those other hospitals, and he had described where all she had worked, in Oregon, at Ball Memorial -- did you know she worked in Oregon?
A I don't remember that, no.
Q Okay. Did you know she worked at Ball Memorial Hospital?

A I read the deposition of Mr. Wiley. And to the extent that --
Q I didn't ask you about the deposition. We're talking about what he testified right here in front of this jury.
MR. FURR: Just a minute, Your Honor. He's responding to the question as to what knowledge he had relevant to the specific question he was asked, and he read the deposition. I think he's entitled to answer the question.
THE COURT: Read your question, if you have a question.
Q You're unaware that Mr. Wiley testified right here in this courtroom in front of this jury, first witness in this case, that the hospitals that she worked in before she got to the VA, she was exposed to people smoking in her vicinity the entire time.
MR. WAGNER: Judge.
A Of course, I'm unaware of that.
Q You're unaware of that?
A I was operating under the Court order of separation of witnesses. I don't know what any witness said in this case.

Q So you are unaware of that testimony? That's my only question.
A Yes, I am. That's correct.
Q Your measurements that you began taking with these instruments and the ones that have been improved over time were of conditions that existed after 1986; correct?
A No. I'm not sure that's correct.
Q Well, when did you start with the company?
A You're asking me personally now or RJ Reynolds?
Q I just asked you personally.
A You've been using me and RJ Reynolds interchangeably. I just want to make sure I understand your question.
Q I'm talking about you.

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A My first measurements that I was involved in were in 1985.
Q 1985?
A Right.
Q And they were of conditions that existed in 1985; correct?
A Sure.
Q And you told OSHA, and you told this jury, that conditions were smokier in the '60s and

'70s, didn't you?
A No, that's not what I said.
Q Well you didn't -- do you want me to show you what you said to OSHA again?
A Yes, please, because I told you then you misrepresented it, and you didn't allow me to explain it.
MR. WAGNER: Judge, this is repetitive. We've been through this once.
THE COURT: I thought we went through this this morning.
MR. MOTLEY: We did. Now, he's claiming he didn't say it.
THE COURT: We've heard it once. We've heard it once. That's enough. Let's move on.
BY MR. MOTLEY:
Q Did you testify at the OSHA hearing, sir?
MR. WAGNER: Judge, Your Honor just ruled.
MR. FURR: You told him to move on.
THE COURT: We've heard this once.
MR. MOTLEY: Different issue, Your Honor.
THE COURT: This is different?

MR. MOTLEY: Yes, sir.
Q Did you testify at OSHA hearings?
A I did, yes.
Q Did you testify about your personal experience?
A I sure did.
Q Did you testify about what you knew from the literature and about smoking habits prior to that time? Yes or no?
A I don't know that I did in that context.
MR. MOTLEY: Your Honor, I have a motion to make when the witness is gone. I don't need to make it now.
THE COURT: All right.
Q Final question, sir: When you indicated -- final two questions -- about the elevator policy, what was the date of that?
A I can look it up again.
Q It was 1977; correct?
A I can look it up. I assume '76 or '77. I'm not sure which.
Q All right. And are you unaware of whether or not Mildred Wiley was ever exposed to secondhand smoke while flying on airplanes?
A I have a general recollection from

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Mr. Wiley's deposition that I believe she was not, but I don't -- any other information I don't have.

Q You don't know what was testified here in this courtroom?

A No, sir, I don't.

MR. MOTLEY: That's all I have. Your Honor. I have one matter I want to address after the witness leaves.

MR. FURR: Your Honor, if it relates to the witness, perhaps we ought to discuss it before he's excused.

MR. MOTLEY: No, it doesn't have anything to do with any testimony.

MR. WAGNER: I also have a matter, Your Honor.

THE COURT: Doctor, I believe you may step down. Thanks for coming to Indiana.

THE WITNESS: Thank you.

THE COURT: Need to approach, Counsel?

(Bench discussion)

THE COURT: Ladies and gentlemen, the next witness will be called. We need

about ten minutes, though, before we do that. He's going to be fairly lengthy, so I think we'll take a break at this point. Remember, don't talk among yourselves about the case.

(Standard admonition)

MR. CASSELL: All rise.

THE COURT: Jury is not present. Is that 88, Counselor?

MR. WAGNER: Your Honor -- Mr. Cassell, what is the number of this?

THE COURT: Annual report transcript.

MR. OHLEMEYER: Annual meeting, Your Honor.

MR. CASSELL: 87.

THE COURT: For the record, a portion of Exhibit 87 was handed to the jury.

You have an objection, Mr. Wagner?

MR. WAGNER: Yes, Your Honor. I ask that I have a motion, I believe, since Your Honor admitted this document into evidence.

THE COURT: All right.

MR. WAGNER: Your Honor, this is in reference to what has been admitted as Plaintiffs' Exhibit 87, and I've given Your Honor a copy of the excerpt from this exhibit that was passed to the jury.

THE COURT: Right. Page 60, 61 and 62.

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MR. WAGNER: Right. And at the bench conference, which was about whether or not Mr. Motley could ask the witness, or paraphrase or quote from page 58, which was a question posed to the chairman at the meeting, page 58 of Exhibit 87, which was a question posed by Ms. Donley to the chairman, and Mr. -- and Your Honor ruled that he could not do that, and he was allowed then to read the answer of the chairman which begins at page 60 to the jury.

Now, what the plaintiff and Mr. Motley passed to the jury were excerpts which also included the material at pages 61, beginning at page 61, which I highlighted for Your Honor, over to the end of page 62 of that same exhibit, No. 87.

And in there is a dialogue which occurs with a priest, apparently, a Father Crosby, who talks about people clapping at what he just said. "That children will crawl out of a room and will have to wait until they crawl --"

He says that's insensitive. He thinks "that's terribly insensitive that the shareholders would clap at a statement like that. I don't want to do a guilt thing, but it really is a disappointing thing. You might disagree, but children should not have to take in other people's smoke. We don't need it and we can walk out; a child can't." It goes on and on in that vein down to the bottom of page 62.

Now, Your Honor, that's the same kind of dialogue that Your Honor said Mr. Motley could not ask the witness about. But Mr. Motley slipped this to the jury in the excerpt from this Exhibit 87, and the jury read the entire document.

Now, I have two motions to make.

THE COURT: All right.

MR. WAGNER: The first motion is

that Your Honor should instruct the jury, when the jury returns, that that material should not have been given to them by Mr. Motley, that they are to disregard it, that Mr. Motley is admonished by the Court for having done something that was in spirit, if not in letter, in direct conflict with Your Honor's ruling.

Subject to Your Honor not giving that instruction to the jury, I move for a mistrial on those grounds.

THE COURT: All right.

MR. MOTLEY: May I respond, Your Honor?

THE COURT: Certainly.

MR. MOTLEY: First place, nobody

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objected to page 62, and I have no objection, Your Honor. My only point was the point I was making which was the answer to a question. I have my objection to the page from the document being expurgated from page 61 where Father Crosby begins his talk over to page 62, because my point was simply to hand a complete transcript.

Your Honor, they never objected at the

bench. The case of Bower vs. Bower, 146 Indiana 393, makes Counsel has the obligation to make a motion to strike something from the record while the witness is still here during cross-exam. He made nation such motion with respect to No. 62.

His request that I be admonished for doing something he failed to object to is rather unusual. And, Your Honor, his statement that the jury read the entire document, that's his observation based only upon his statement standing up here. I was busy with the witness. I don't know whether the jury read the whole document or not. But there's certainly no basis here for a mistrial or an admonition or anything else.

If counsel wants to cure the Father's rhetoric and Mr. -- the Father's rhetorical question, and the chairman's rhetorical response to it, in other words, Father Crosby's characterization of the chairman's answer, which I'm not interested in presenting to the jury, and the chairman's response to the Father's accusation, I'm perfectly happy to have that go out, along

with any other things in that document, Your Honor, of a similar nature.

We were up at the, up at Your Honor's bench. They raised the objection to page 58. Your Honor told the witness not to read page 58 out loud, but read it to himself so he would have the context of the question. If you recall, I was required to lay a foundation as to whether or not this dealt with ETS. And the way to understand Mr. Harper's response was to read Ms. Donley's question. The question was not presented to the jury on page 58. I don't know how Mr. Wagner would know that the jury read the question on page 62 or not.

But in any event, the cure for any of that, if there's anything to be cured, would be to remove from page 62 of the transcript, when the jury gets it, the priest's rhetorical characterization and the chairman's rhetorical response, because all I'm interested in is the fact that the question was asked, and Harper's response, and Your Honor allowed that in over objection, which we argued at great length.

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The answer on page 60 and 61.
THE COURT: Mr. Wagner, this entire document was admitted into evidence.
MR. WAGNER: Yes, sir, it was, over --
THE COURT: Over objection. This jury could have sat right here and read this entire document today.
MR. WAGNER: Yes, sir.
THE COURT: You agree with that?
MR. WAGNER: Yes, sir, as I understand the laws of evidence, and although in this trial, of course, as Your Honor knows, we've been publishing, or plaintiffs have simply been publishing sometimes excerpts from exhibits as opposed to reading the entire document.
THE COURT: That doesn't mean the entire document is not in evidence.
MR. WAGNER: I don't quarrel with that, Your Honor.
THE COURT: At the bench conference, my recollection is I asked Mr. Motley what pages he would refer to and he would display to the jury, and he

indicated 60, 61, 62; is that your recollection?
MR. WAGNER: Yes, sir, that is my recollection. However, in the context of the discussion that we were having at that time, Mr. Motley, prior to the time we approached the bench, had wanted to read to the witness and out loud the material that began at page 58 with the question from Ms. Donley. And that was the focus, Your Honor, of my objection and our objection and Your Honor sustained that.
Now, we did not know -- I did not know what had been passed to the jury. In fact, Mr. Motley and the other plaintiffs' counsel who were at the bench said that Ms. Donley's questions, which began at page 58, were not in what was being published and passed to the jury. I mean, I'm sure Your Honor will recall that. You said, well, okay, that's fine, but he can't read it out loud to the witness either.
THE COURT: And he didn't.
MR. WAGNER: And Your Honor sustained that objection and that didn't

happen.
THE COURT: You're right.
MR. WAGNER: But now what has happened, as I found out after I went up and retrieved a copy of what had been passed to the jury, is exactly the same sort of question was passed to the jury in the form

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of the material beginning at pages 61 from the question from Father Crosby, which I just outlined.

THE COURT: And that is precisely what Mr. Motley told us at the bench conference what would be passed to the jury.

MR. MOTLEY: Your Honor, for the record, before we even walked up to the bench conference, I told the counsel, including Mr. Wagner, who was sitting there, they asked me, what pages I was handing to the jury, and I told them on the record what the page numbers were.

MR. WAGNER: I can only say, Your Honor, I did not see what was passed to the jury. It was my understanding that the question that Your Honor sustained wasn't being passed to the jury. And it was my

understanding, at least from -- at least the spirit of what was being argued and what was being passed to the jury, that no objectionable material of the kind that Your Honor had sustained my objection to was being passed to the jury either.

But having gotten a copy from Mr. Cassell as to what was passed to the jury, I then discovered that they gave the jury the same material that Your Honor had sustained an objection to only from a different questioner, Father Crosby.

MR. MOTLEY: I don't think it's fair to say that's the same.

THE COURT: All right. Thank you, Mr. Wagner.

Mr. Wagner, is your motion for mistrial made on behalf of all defendants?

MR. WAGNER: I'm just making it on behalf of RJ Reynolds Tobacco Company, RJ Nabisco Holdings Corporation, Your Honor.

THE COURT: Is Mr. Ohlemeyer here?

MR. OHLEMEYER: Yes, I am, Your Honor.

THE COURT: Is that made on behalf

of your clients, Counselor?

MR. OHLEMEYER: Yes, it is, Your Honor.

THE COURT: All right.

MR. OHLEMEYER: In light of the plaintiffs' conspiracy claim and their eventual argument to the jury that evidence admitted against one company is going to be used against all companies, I think it would be.

THE COURT: Any defendants except from that motion?

MR. SHOCKLEY: I didn't understand the form of your question, Your Honor.

THE COURT: I didn't make that question.

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MR. SHOCKLEY: Let me put it different. American Brands would join in the motion.
THE COURT: Thank you.
MR. SCHEINER: CTR will join in the motion for the record.
THE COURT: All right.
Any defendants do not join in the motion? Otherwise Court will assume it's

made on behalf of all defendants.
Court notes no defendants do not join in the motion, do not except to the motion.
First of all, the motion for the jury to disregard, as I pointed out at the argument, Mr. Motley stated the pages that would be handed to the jury, as I indicated on the record after they were displayed to the jury, those, in fact, were the pages that were handed to the jury along with the cover page. There was no objection to those precise pages, and for the record that is 60, 61 and 62. The motion for the jury to disregard that is not well taken and denied.
Motion for admonishment because of my prior ruling, the motion is denied.
Motion for mistrial made on behalf of all defendants is not well taken and is ordered denied.
We'll break for ten minutes.
(A brief recess was taken.)
MR. CASSELL: All rise.
THE COURT: Be seated. Jury back with alternates.
Mr. Furr, call your next witness.

MR. FURR: Yes, Your Honor, the defense calls Dr. Paul Levy.
THE COURT: Good afternoon.
THE WITNESS: Good afternoon, sir.
Raise your right hand, please.
DEFENDANTS' WITNESS, PAUL LEVY, SWORN
THE COURT: Would you have a seat right over there, please. Would you tell this jury your name.
THE WITNESS: Paul Levy.
THE COURT: And spell your last.
THE WITNESS: L-E-V-Y.
THE COURT: I think if you pull the chair just a little closer, you won't have to lean forward.
THE WITNESS: I don't think it's working.
THE COURT: Yes, it is. You're fine. Thank you.
Mr. Furr.
MR. FURR: Thank you. Can we approach for five seconds? I would like to inform the Court of something.
THE COURT: All right.
(Bench discussion)

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THE COURT: Mr. Furr.
MR. FURR: Thank you, Your Honor.

DIRECT EXAMINATION
BY MR. FURR:

Q Good afternoon, Dr. Levy?
A Good afternoon, Mr. Furr.
Q That you for being so patient with us.
A No problem.
Q Would you please tell the jury what your occupation is.
A I'm Professor of Epidemiology and Biostatistics at University of Illinois-Chicago.
Q You're an epidemiologist, sir; is that correct?
A Yes, sir.
Q And are you also a biostatistician?
A Yes, sir.
Q How long have you been a professor at the University of Illinois in Chicago?
A Since 1972.
Q So that would be 26 years?
A Twenty-six years. I was away for a year at the University of Massachusetts, so I just received my 25-year award.

Q Twenty-five years.
A Yes.
Q And you're a professor in the University of Illinois School of Public Health; is that correct?
A Yes.
Q Would you explain to the jury what the mission is of the School of Public Health.
A The mission of the School of Public Health is basically to teach students to do research, to collaborate with health officials on matters dealing with the health of the community and the nation as a whole, and I guess the world as a whole.

In Illinois we concentrate on the regional area, Chicago and down state Illinois. We're the only accredited public health in Illinois.

Q What types of students are taught in the school?
A Graduate students. Students getting a professional master's degree, Master's of Public Health, which is sort of the public health equivalent of the Master of Business Administration. It's a professional

master's. People that are in that degree are generally physicians, nurses, health administrators, people who are making careers out of public health.
Q Is the University of Illinois School of Public Health an accredited school?
A Yes. As I mentioned earlier, it's the only

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accredited School of Public Health in Illinois.

Q How many accredited schools of public health are there in the country?

A When I started, there was about 20. There are about, I would guess around 30 accredited schools of public health.

Q Okay. I would like for you to walk through with the jury your career at the University of Illinois. You first became a professor in 1972; is that correct?

A That's correct.

Q And you became a full professor in 1976?

A Correct.

Q And In 1979 you became the Director of the Division of Epidemiology and Biostatistics?

A Correct.

Q How long were you the director of that

division, Dr. Levy?

A Approximately 18 years, until June of this year.

Q While you were Director of the Division of Epidemiology and Biostatistics, what were your major duties and responsibilities?

A Well, my major duties were to preside over a division that grew rapidly to about 16 faculty members, about 100 students, and a budget of about $4 million per year, a lot of it in externally funded research, so we presided over a pretty large program of research, teaching, service to the community, consulting. We grew very quickly.

Q With respect to you personally, Doctor, I take it that during those 18 years, you would have had administrative duties?

A Yes, I did.

Q Did you also teach during those 18 years?

A Yes. I taught and developed curriculum.

Q Did you also conduct research yourself during those 18 years?

A Yes, I did.

Q Now, when you tell us that you were the

Director of the Division of Biostatistics and Epidemiology, where does that fit into the academic hierarchy? Is that like being the dean, or how can you explain that to us?

A I reported to the Dean of the School of Public Health. I was the equivalent of a department chairman of a fairly large department in a graduate school.

Q Now, you're no longer the director of the division, I take it?

A No, I'm not.

Q When did you resign?

A June of this year.

Q And why was that?

A I wanted to spend approximately the last ten years of my career doing some research,

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doing less administration, developing some new courses, doing something other than a primarily administrative managerial job. I wanted to do some more research and teaching.

Q Dr. Levy, we have had a number of witnesses talk to us about epidemiology, but you're the first full-time epidemiologist that has been here, so I want to ask you a few basic

questions, if I could.

A Fine.

Q Let's start with you defining for the jury what epidemiology means, please.

A Well, the usual definition of epidemiology is that it's the study of the distribution and determinants of diseases in human populations. And what that means is it's the discipline that deals with who gets diseases and why they get them. And by the term "why they get them," what exposures in relation to their lifestyle, in relation to their environment make them more or less susceptible to the occurrence of certain diseases.

Q Dr. Levy, how does one become an epidemiologist?

A How does one --

Q Become an epidemiologist.

A There are several avenues. One way is if you were a physician and you had an interest less in clinical work than in doing research and population type of research, one could become an epidemiologist by taking -- getting a Master of Public Health Degree

with a concentration in epidemiology. The same if you were another type of health professional, such as a nurse or an environmental scientist, one could get an MPH in epidemiology.

If you had no previous professional degree, you could get -- we give a Ph.D. and a master's, an academic master's, in epidemiology at our school and at all the other schools of public health.

Also, one of the -- I got into epidemiology, I got a doctorate in biostatistics and then had been at the Centers for Disease Control doing practical epidemiology and got more and more interested in epidemiology, did epidemiological studies, and became a fellow of the American College of Epidemiology.

Q Dr. Levy, I believe you just stated that you had some training at the Centers for Disease Control; is that correct?

A Yes. In 1960 I was a Public Health Service officer, U.S. Public Health Service, and spent two years in the epidemiology division of the Centers for Disease Control in

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Atlanta.
Q Would you explain what the Centers for Disease Control is.
A It's a very large agency that looks at -- that does, among other things, it's responsible for the study of -- to deal with epidemics, to deal -- both infectious disease, environmental epidemics -- environmentally-caused outbreaks of things. It's a major agency that deals with primarily epidemiological work.
Q Dr. Levy, is it possible to become certified in the field of epidemiology?
A Yes, it is.
Q And how does that occur?
A There's a College of Epidemiology, American College of Epidemiology, that certifies people. One can apply to be certified. There used to be an examination, but they no longer do that. If one has the proper credentials, such as being a physician with a Master of Public Health Degree, or another type of bioscientist like, say, a molecular biologist with publications in epidemiology, one's credentials are evaluated, and one

becomes a member or a fellow of the American College of Epidemiology.
Q Dr. Levy, are you, in fact, certified as an epidemiologist?
A Yes, I am.
Q And isn't it correct that you were on the original committee that developed the test to be used to examine whether or not individuals should be so certified?
A Yes, I was on that committee in 1980.
Q Dr. Levy, you're also a fellow in the American College of Epidemiology; is that correct?
A Yes, I am.
Q Would you explain to the jury what it means to be a fellow in the college.
A To be a fellow one has had -- one is evaluated according to the contributions one has made in epidemiology in terms of service to the government or to the field of epidemiology, but primarily in the studies they've done, the studies a person has been involved in, major publications.
Q Dr. Levy, have you conducted epidemiology studies?

A Yes, I had. I have.
Q Over the course of your career, approximately how many studies have you been responsible for, either as the principal or co-principal investigator?
A At least 12 to 15 as the sole or co-principal investigator. I'm not exactly

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sure of the number, but it's at least that many.
Q And approximately how many additional epidemiology studies have you been involved in?
A Over a 35-year career, approximately 50, I would say.
Q Dr. Levy, I believe you told us a few minutes ago that you were both an epidemiologist and a biostatistician; is that correct?
A Correct.
Q Would you explain to us the distinction between an epidemiologist and a biostatistician?
A Sometimes it's a gray area. An -- epidemiology is really a biomedical field that studies exposures that might be risk

factors for disease and uses a lot of principles of statistics, such as study design, statistical analysis, uses the field of -- uses biostatisticians quite a bit.
Biostatistics is more of a mathematical statistical field. A typical biostatistician would have, say, a Ph.D. degree in statistics with interest in health statistics, epidemiological studies, studies of vital statistics, so it's applications of mathematics and statistics to the biomedical sciences.
Q And you're both; is that correct?
A Yes. My doctorate is in biostatistics.
Q Dr. Levy, let's back up just a bit, and I'd like for you to explain to the jury, or describe your educational training beginning with college, please.
A I went to college at Yale in New Haven, Connecticut, where I was born. I got a Bachelor of Science in mathematics in 1958. From there, I went to Columbia University. I got a master's degree in mathematical statistics, although I was only there for two years. I didn't get my degree until

1962, because I had left before I got my degree to be a Public Health Service officer.
I then went to Johns Hopkins University School of Public Health in Baltimore, Maryland, and got my degree in 1964, Doctor of Science Degree.
Q And is a Doctor of Science Degree -- is the modern equivalent of a Doctor of Science Degree, the Ph.D. degree?
A Yes. At the time I went to school, there were -- to graduate school -- there were just two institutions that still gave Doctor of Science Degrees in public health. One was Harvard, the other was Johns Hopkins. I think Harvard still does. I don't think

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Johns Hopkins does still. It's equivalent to a Ph.D. Same curriculum, same thesis type of thing.

Q After you earned your doctorate in biostatistics, you went to the Harvard Medical School; is that correct?

A Yes.

Q And would you explain to the jury what you did at Harvard.

A First year I was a post-doctoral fellow doing some research in mathematical biology at what's now Peter Bent Brigham and Women's Hospital.

After that, I took a position in the department of preventive medicine and was there for approximately six years. I taught medical students biostatistics, and I did epidemiological studies, particularly in factors relating to some infectious diseases, primarily.

Q You said you were there six years?

A I think six years. I think I was -- I left -- a little over six years. I left around December of 1970, I think.

Q After your six years of teaching and researching at the Harvard Medical School, where did you go next?

A I went to the National Center for Health Statistics in Rockville, Maryland, at the time. It's somewhere else now. It's now a division of Centers for Disease Control, CDC.

And that's the agency that is responsible for the vital statistics of the

United States; marriage, divorce, birth and death statistics, and major health surveys. And I was there -- I think my title was mathematical statistician, and I worked on the statistical methods for some of the major health surveys.

Q Well, let me ask you about that, Doctor. What kind of -- specifically what kind of work did you do at the National Center for Health Statistics?

A Basically research and sampling theory.

Q Sampling theory?

A Yes.

Q Could you explain to the jury what sampling theory is and perhaps use an example to explain that.

A Okay. Well, one example, if I wanted to study environmental tobacco smoke, let's say in Muncie, how many people are exposed to environmental tobacco smoke, and I wanted to take a sample of a population, I would want to take -- I would want to use certain principles. For one thing, I would want everybody in the population to have a certain chance of getting into the survey,

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so that I cover everybody. And I want to do it -- take enough people so that I get a statistically valid -- so that the proportion that I end up getting of people exposed is statistically valid and reliable. So I want to take enough people, and I want to do it at a reasonable cost.

So since there's no way that I can put the names of everybody in Muncie -- I think there are about 75,000 people at least -- into a hat and dip into the hat, and the ones that I pick out choose and survey, I would probably take a sample of city blocks and then -- and then take a subsample of houses within blocks, and then have interviewers go to the household and interview the people and sort of ascertain their exposure status to ETS, both at home and in the workplace.

And then following that, I would put all the data together and come up with a proportion and a measure of how valid that proportion is.

Q Dr. Levy, you could talk about sampling theory at some length, couldn't you?

A If people would listen, I could.

Q In fact, you've written a couple of texts on that subject, haven't you?

A Yes, I have.

Q As well as numerous book chapters?

A Yes.

Q Where did you go when you left the National Center for Health Statistics?

A At that time, Illinois, the State of Illinois, had just begun a School of Public Health, and I was asked to participate as a charter faculty member. It was a new and exciting school, and I became a faculty member in 1972 at the University of Illinois-Chicago School of Public Health where I still am.

Q Dr. Levy, as a professor, you've been actively involved in teaching of students, haven't you?

A Yes, I have.

Q Could you briefly describe the types of courses you've taught over the past 30 years.

A I've taught and developed several courses in biostatistics and in epidemiology. For one

thing, we have a medical school at the University of Illinois. In fact, I think it's the largest in the United States. And I taught biostatistics to medical students, to second-year medical students, there for about eight or nine years; and also at the University of Chicago, I was invited to

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teach the same course there and at Chicago Medical School.

I also taught and developed courses in statistics and biostatistics at various levels to School of Public Health students. I taught courses in sampling theory, I taught and developed courses in epidemiologic methods. I just -- this Thursday I just finished an eight-week course in quantitative methods in epidemiology.

Q So Dr. Levy, in addition to teaching medical students, you teach epidemiology and biostatistics to doctoral level or master level candidates who wish to become epidemiologists, don't you?

A Yes, we do.

Q In addition to your formal appointments,

teaching appointments, you also give a large number of invited lectures on epidemiologic and biostatistical topics, don't you?

A Yes, I do.

Q Could you give the jury just a couple of those.

A Well, just recently I was -- I gave a lecture at the University of Massachusetts in Amherst on low-level epidemiological associations between exposures and disease, and one of these low-levels associations involved environmental tobacco smoke. That's one of the ones I gave just recently.

I gave a course, series of lectures in sampling theory to economists at Dar es Salaam in Tanzania about a year ago, a little less than a year ago, a four-week course and series of lectures in sampling theory and basic statistics sponsored by the World Bank.

And I taught a course in environmental epidemiology in Moscow to Russian environmentalists, spent a month there in fall of 1996.

Q Dr. Levy, you told us about the books and

book chapters. You've also written a large number of individual articles that have been published in peer-reviewed journals, haven't you?

A Yes.

Q Can you give us an approximation as to how many?

A Approximately 160 to 170.

Q You also have served as a peer-reviewer for a number of journals, haven't you?

A Yes.

Q The jury knows what that means, but let me read you a list of journals, if I could, and you tell me whether or not you've served as a peer reviewer for those journals, okay?

The Journal of American Statistical

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Association?
A Yes.
Q Statistics in Medicine?
A Yes.
Q Biometrics?
A Yes.
Q The Journal of the American Medical Association?
A Yes.

Q Annals of Internal Medicine?
A Yes.
Q The American Journal of Public Health?
A Yes.
Q The American Journal of Epidemiology?
A Yes.
Q The New England Journal of Medicine?
A Yes.
Q I take it there are others?
A I'm sorry?
Q I take it there are others also?
A Yes, there are.
Q Dr. Levy, are those journals among the leading medical, statistical, and epidemiologic journals in the world?
A Yes. I believe they are.
Q In addition to serving as a peer-reviewer, you have also served on the editorial board of scientific journals; is that right?
A Yes.
Q Would you explain to the jury what that means.
A It means I'm responsible for not only reviewing articles, but for having articles sent to other reviewers, to evaluating the

comments of other reviewers, to -- and to passing on my decisions or my recommendations to the editor in chief.

In one of these, I was editor of the Encyclopedia of Biostatistics, a section editor for sampling theory and design of experiments. That sort of editorial board duty entailed that I commission about -- find about 80 people to write articles on various topics that cover the field of -- that I was responsible for, make sure that they write them, that they do them on time, send them back, have them send them back to me, review all of them, send it back to them for corrections or for revisions, and then eventually it goes to the editor in chief. And the entire publication is due out in -- actually, as we're talking, in March, middle of March, and it will be a six-volume encyclopedia on CD rom and in hard cover.

Q You're also on the editorial board for a journal called Statistics in Medicine?
A Yes.
Q Is that a prominent journal in the fields of epidemiology and biostatistics?

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A That's become probably the leading journal in applications of biostatistics to medical sciences.
Q Dr. Levy, in your career, have there been a number of occasions when various agencies of the United States Government have called upon you to help them understand public health issues?
A Yes.
Q I want to list, read to you a list of agencies, if I could, and you tell us whether or not these agencies have called upon you for assistance in understanding those types of issues, okay?
A Okay.
Q The National Institutes of Health?
A Yes.
Q The National Institute of Occupational Safety and Health?
A Yes.
Q The Food and Drug Administration?
A Yes.
Q The United States Department of State?
A Yes.
Q The National Center for Health Statistics?

A Yes.
Q The National Academy of Sciences?
A Yes.
Q The Armed Forces Institute of Pathology?
A Yes.
Q And the Centers for Disease Control?
A Yes.
Q The National Institutes of Health?
A Yes. You said that.
Q Maybe I read that one twice.
Dr. Levy, you're also called upon from time to time by private entities for assistance in understanding epidemiologic and biostatistical issues, aren't you?
A Yes, I am.
Q Can you give us a recent example of that type of project?
A Yes. Fairly recent one was Monsanto, which is a chemical company in St. Louis. It has a division that produces a sweetener, food sweetener, called NutraSweet, which contains a base factor ingredient, a product called aspartame. If you drink diet sodas, you've been exposed to aspartame. If you put these little -- if you use Equal or other

sweeteners, you probably have, too.
And there was some issue of whether these -- whether use of aspartame is associated with brain tumors. I thoroughly reviewed brain tumor statistics and aspartame market -- not marketing but product sales and correlated the rise in

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brain tumors with use of aspartame.
And it turned out that the incidence of brain tumors was increasing long before use -- before aspartame became approved in the mid-1980s. And aspartame is still being widely used, and brain tumors are now leveling off some, so I wrote a letter to the editor of a journal stating that it's my conclusion, my opinion that there is no relationship between the two.

Q One more background question, Dr. Levy. Could you describe for the jury what some of your current research projects are.

A Yes. Some of my current projects are -- I'm finishing the third edition of my sampling book. I'm involved in developing curriculum for a training grant, training students to be epidemiologists in the field of the

epidemiology of diseases of the elderly. Most of -- some of us are elderly now. By the year 2010, there will be approximately, I believe, 30 percent of the people over 65 years old; so diseases of the elderly are going to be very important.

Q Okay.

A We're an aging population.

Q Dr. Levy, as an epidemiologist with more than 35 years of experience, do you have expertise in the statistical principles involved in the design, analysis, and interpretation of epidemiologic studies such as those that have been conducted on environmental tobacco smoke?

A Yes, I feel that I do.

Q Are those the types of principles that you have used on a daily basis for the past 35 years?

A Yes.

Q Dr. Levy, I now want to preview for the jury what I've asked you to come here and testify about. And have I, in fact, asked you to explain to the jury the types of statistical and epidemiologic principles that

epidemiologists such as yourself use in designing, analyzing, and interpreting epidemiologic studies such as those of environmental tobacco smoke?

A Yes, you have.

Q And have I also asked you to provide to the jury your evaluation of the epidemiologic studies of environmental tobacco smoke and lung cancer using those same principles?

A Yes, you have.

Q Have you done the work necessary to provide testimony on those topics, Doctor?

A Yes, I feel that I have.

Q Approximately how long has it taken for you to do all the work necessary to address those issues?

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A Somewhere between 120 and 140 hours of work. I don't have the exact figures because I have not brought my -- my hours are not kept on the laptop that I travel with.
Q Okay.
A But it's approximate. No fewer than 120, no more than 140, including today's event.
Q You have charged for your time in preparing to testify here, haven't you?

A I'm sorry?
Q You've charged for the time that you've spent to testify?
A Yes, I have. Yes.
Q What rate do you charge for those types of services, Doctor?
A $275 an hour.
Q Doctor, have you ever testified in court as an expert witness before?
A Yes.
Q Approximately how many times?
A Roughly four or five times that I've actually testified in court.
Q Have you ever testified before in a case involving tobacco?
A No, I haven't.
Q You may not be able to see them clearly, but have you ever worked with me or any of the other lawyers on this side of the room before this case?
A Other than on this particular project, no.
Q Dr. Levy, I'd like to ask you to walk us through the types of statistical and epidemiologic principles that an epidemiologist such as yourself would use to

analyze an issue such as whether or not the epidemiology studies of environmental tobacco smoke are consistent with a causal relationship. Okay?
A Okay.
Q To answer that type of question, what would be the first thing that you would do as an epidemiologist?
A I would make sure I had all the data available on the topic.
Q How would you do that?
A I would do a literature search. These can be conveniently done by use of a computer. Almost all of us in medical institutions are connected to the National Institutes of Health, the National Library of Medicine. We can plug in a few key words, such as environmental tobacco smoke, lung cancer, epidemiological studies, human studies; plug it in, push a button, and also indicate what time periods we would want for the -- want the literature.
And, for example, the first study was in 1981, so I would put something like 1980 to present. And the computer would spew out

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the list of approximately all the studies that were in its computer file on that particular topic.

And I believe that's what I did, and I believe I had gotten several hundred studies. Not all of them were relevant. I then go through the abstracts. Abstracts are short, 200 at most, writeups of what's in the study, and pick out for further study those that look to be relevant to the topic. And then of those that are relevant, I get the entire articles.

Q Let me ask you how you went about making those relevancy determinations. To answer the question of whether environmental tobacco smoke exposure is associated with increased risk of lung cancer, what types of studies were you looking for?

A I was looking for epidemiological studies and especially for the type of epidemiological study that would enable you to look at -- the type of study that will come up with an association, an estimate of association between a putative risk factor, exposure, and a particular disease; in this

case, ETS and lung cancer. And there were two basic types of studies.

Q And what types of studies are those?

A Case/control studies and cohort studies.

Q What is a case/control study?

A Let me start with a cohort study because that's more --

Q Okay.

A That's easier to explain.

A cohort study is one where you take a whole defined group of people. It could be a community, it could be an occupation -- group of people working in a particular plant. And once you define what this group -- this cohort, you then measure what their exposure is to the putative risk factor that you're interested in. In this case, you would measure what their exposure is to environmental tobacco smoke.

You then follow these people for a number of years, and you look at who gets lung cancer and who doesn't.

Q And that's a cohort study?

A That's a cohort study.

Q And what is a case/control study?

A A case/control study is a more common type of epidemiologic study. Instead of starting with a group of people and looking at their exposure and then following them up for disease, you start with a group of people that actually have the disease, and in this case one would look at a group of people

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with lung cancer, and -- well, without getting too specific, let's say a group of people with lung cancer. And then take a group of people -- I'm sorry, let me backtrack.

The group of people with lung cancer are the cases, they're called the cases. The controls are a group of people that are chosen because they're very similar to the cases except that they don't have lung cancer. So you have two groups; cases, people with lung cancer; cases -- controls, people without lung cancer.

In both of these groups, you measure by questionnaire, actually, or by telephone, by some sort of interviewing process, whether they've been exposed to environmental tobacco smoke and if so, as best you can do,

how much, what their total exposure is.

Then your bottom line is comparing the proportion exposed among the cases with the proportion exposed among the controls. If there is a relationship between the two, the proportion exposed among the cases should be higher than the proportion exposed among the controls.

Q Okay. The question before us is examining whether or not environmental tobacco smoke exposure is associated with an increased risk of lung cancer; right? In that regard, would you be looking for studies of active smoking and lung cancer risk?

A No, I wouldn't because --

Q Why not?

A Because active -- we're looking at exposures that are among people that are not active smokers. A person who is an active smoker has very high risk of getting lung cancer. We don't want to look at them. We want to look at people who are nonsmokers and look at what their risk is from exposure.

Q Okay. When you began explaining to us the types of studies you would look for, I

believe you testified that you would look for studies that provided some measure of association between --

A Yes.

Q -- exposure and disease; is that correct?

A That's correct.

Q What did you mean by measure of association?

A A kind of bottom line figure that measures the strength of the relationship between exposure, which in this case is environmental tobacco smoke, and lung cancer. And the usual bottom line statistic is called a relative risk.

Q Slow down for just a minute, Doctor.

A Okay.

Q You said you would look for the strength of

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the association; is that correct?
A Right.
Q And you would examine that topic by looking at, did you say, relative risk?
A Yes. It's called, most frequently, a relative risk. Sometimes it's called a risk ratio. And something very similar is called an odds ratio. But basically they're the same thing.

Q And what is a relative risk?
A Relative risk measures the likelihood -- okay, it's a ratio of the chances -- ratio in that that has as a numerator the chances of a person exposed to a particular -- to let's say ETS, the chances of that person getting lung cancer; and in the denominator the chances of a person not exposed getting lung cancer.
For example -- should I give a simple arithmetic?
Q Please do.
A Okay. I won't do it with ETS. Yesterday, I, between breaks in the rain, I took a six-mile run towards, I guess it was towards Ball State, and I passed a very nice Catholic Church right near the hospital. And I was thinking of a possible example. And let's say there was a church supper there and they had two things. These are hypothetical, considering what happened to Oprah, chicken and beef.
MR. MOTLEY: What happened to who?
MR. FURR: Oprah.
MR. MOTLEY: Oh, I'm sorry. I

thought he said the opera.
A And let's say people -- 200 people attended, 100 ate the beef only, 100 ate the chicken only; of the 100 that ate the beef, 50 got a diarrheal-type of disease. So that's 50 over 100 among those getting, eating the beef.
Among those that didn't eat the beef, in other words, that ate the chicken, 25 over 100 got the diarrheal disease.
Q Okay.
A Well, you divide -- the relative risk would be gotten by dividing 50 over 100 by 25 over 100, okay? Just divide that. And you would get two. So the relative risk is 2.
Q What does that mean, Doctor?
A It means that if you ate the beef, you were twice as likely to come down with a disease, with a diarrheal disease, than if you don't eat the beef.
Q Doctor, what would it have meant if the relative risk that you had come up with was 1.0?
A It would mean that there -- you were just as likely to come down with the disease if you

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ate the beef as if you didn't -- as if you didn't eat the beef, and it would imply that there was no relationship between eating beef and coming down with the disease.

Q Okay. Dr. Levy, you told us that you would want to examine the strength of the association that is reflected within the relative risk; is that correct?

A Yes.

Q How do you do that? Let me ask it a different way.

What comprises a strong versus a weak relative risk?

A Okay. It's by the size of that number. For example, if that number was 50, then you would be 50 times as likely to come up with -- to get the disease if you ate the beef than if you didn't eat the beef.

If it were 25, you would be 25 times as likely.

Q Okay. And is there a cutoff that defines a strong versus a weak relative risk?

A Generally, in epidemiology, a relative risk below 2 is considered a weak association. And it doesn't mean that it's not a real

association. It means that because of the most -- in epidemiology, we don't do a lot of physical measurements or biological measurements. A lot of the information on exposure is gotten by interviewing people. And the interview method is fraught with problems, and anything below 2 is considered very fragile with respect to problems in the technique of interviewing.

Q That's what I want to ask you about next.

A Okay.

Q And that is, strength, why do we care how large the relative risk is?

A Well, for one thing, the greater the relative risk, the greater the particular exposure is as a health problem. Especially if it's widely prevalent.

Secondly, the high -- by the epidemiological methods, it's much easier to identify a high relative risk than it is to identify a low relative risk.

Q Okay. You've told us that you look at the strength of the measure of association. Correct?

A Correct.

Q Are there other statistical attributes of the measure of association that you look at?

A Yes.

Q What would that be?

A Well, one would be whether it's statistically significant.

Q Help me, Doctor. T-I-S-T-I-C?

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A No, T-I-C-A-L-L-Y. Significantly.
Q What does statistical significance mean?
A It refers to the chance that a particular relative risk that you obtained from a study might just have occurred by chance. For example, if instead of 100 people that ate and 100 people that didn't eat the beef, I had ten people eating the beef and ten people not eating the beef, there was 20 attending instead of 200, you would get the same relative risk -- actually, you couldn't because you can't have 2.5. But let's suppose you could have 2.5. You'd come up with the same number, 2, but one individual that, say, may not have really had the disease that was classified as having the disease would totally invalidate that statistic. That's for one thing.

Secondly, if you did it again and again, even if there was no true relationship, just the luck of the draw could have given you a relative risk that high if the numbers were small.
Q So is this concept of statistical significance related to the occurrence of chance associations?
A Just chance associations. Just a bad draw.
Q Okay. You told us how to assess the strength of a relative risk. How do epidemiologists assess the statistical significance of a relative risk?
A In two ways. By something called a test of statistically significance -- statistical significance.
Q Okay. What are those tests?
A They have names. They're called -- the one we would use for, to test the relative risk would be a chi square test. Chi is a Greek letter.
Q Okay. What's the second test?
A The second way would be by a confidence interval.
Q What do you mean, confidence interval?

A That's the preferred way for evaluating the significance of relative risks.
Q You say that's the preferred way?
A Yes, the confidence interval.
Q Well, could you give us an example of a confidence interval?
A Okay. Let's say we did a study and we came up with a relative risk of two. And the study was based on a certain number of people.
Q Okay.
A Using statistical theory, based on that particular number of people that were in the study and the actual relative risk that we observed, we could come up with a lower interval and an upper interval.

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Q Give us an example.
A Okay. Let's say confidence interval, let's say the lower interval was 1.5, and the upper interval was 2.6.
Q What would be the interpretation of that confidence interval?
A Well, if we used -- well, if this were a 95 percent confidence interval --
Q Okay.

A -- we would say that we're 95 percent confident that the true relative risk is somewhere between 1.5 and 2.6.
Q If you had come up with a confidence interval of, say, 0.5 to 5.0 at the 95 percent level, how would you interpret that confidence interval?
A That we're 95 percent confident that the true relative risk is somewhere between 0.5 and 5.
Q What does the fact that this interval includes 1.0 mean?
A It means we can't say -- well, if 1.0 implies that there's no assoc -- no relationship between the exposure and the disease; so if the lower interval is less than 1.0 and the upper interval is greater than 1.0, as this is in your last case, we can -- we would say that the relationship is not statistically significant.
Q So this relationship would not be statistically significant?
A Right. Because the interval overlaps 1.
Q And this one would be?
A That one would be, yes.

Q And this is at the 95 percent confidence level.
A Yes.
Q Can the confidence level be assessed at levels other than 95 percent?
A Yes. It can be. You could have it at 90 percent.
Q Is there one level which is traditionally or typically used by epidemiologists and biostatisticians to assess the confidence that you can place on the relative risk?
A The usual level that's been used throughout the ages is 95 percent.
Q What effect on the confidence that you can place on the relative risk would it have if instead of using the 95 percent level, you used, let's say, the 90 percent level?
A Okay. You would have to sort of flip it around a little bit. If you're 95 percent confident that your true relative risk is between those two numbers, then your level of non-confidence, your error level, is 5 percent.
If you use 90 percent as your confidence interval, even though 90 and 95

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are very close to each other, when you look at it the other way around, as your error level, instead of a 5 percent error, you have a 10 percent error if you -- 10 percent chance of being incorrect if you use the 90 percent level.

Q So by changing from a 95 percent level to a 90 percent level, we would be, in effect, doubling our likelihood of error. Is that correct?

A Yes. Doubling your uncertainty in the result.

Q Dr. Levy, let's go back to the question that we began trying to answer. And that is, whether or not the epidemiologic studies -- I should say, what the statistical principles are that you would use to analyze the epidemiologic studies.

If we take our first study and we find a measure of association; that is, a relative risk that is in the range that you believe to be adequately strong, and is statistically significant, are you ready to reach a conclusion as to whether or not that study is consistent with a causal

relationship?

A Not quite yet.

Q What do you have to do next?

A You want to look at -- read the article carefully and look for possible biases.

Q Biases. What do you mean by biases?

A Biases are entities that might be characteristic of the way -- of the way the study was designed or imperfections in the information, in the way the information was gotten from the individuals or the way the subjects were selected that would lead to incorrect conclusions.

Q Does a bias mean that someone has intentionally tried to design the study in a way to reach a certain result?

A No, it doesn't. These are things of imperfections in the measurement process that would lead to a systematic error of some kind.

Q What effect does it have on your analysis of a study if you find biases to be present in the study design?

A It makes -- it makes the study, the conclusions that you come with respect to

the study, not valid.

Q Are there any particular types of bias that you would be concerned about evaluating when looking at studies of environmental tobacco smoke and lung cancer?

A They're particularly fragile with respect to biases, because the usual design is to take

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the case/control design. Your cases are nonsmoking women with lung cancer. So to be classified -- to be a case, one has to not only have lung cancer and be a woman, one has to be a lifetime nonsmoker.

Q What type of bias are you concerned with in that regard?

A It's been shown in several validation studies that people that claim to be lifetime nonsmokers, either by not understanding the question or by not wanting to admit to ever having smoked, really may have had some smoking history. So the people that are lifetime nonsmokers in these studies, there may be a proportion of them that have been misclassified.

Q Is that what is referred to as smoking status misclassification?

A Yes.

Q And have there, in fact, been studies done to determine at what rate people get misclassified with respect to their smoking status when they participate in the epidemiologic studies of environmental tobacco smoke?

A Yes. There have been studies. Generally, I would say most of them are in the range of about 2 to 10 percent misclassification.

Q Okay. Well, what's the effect of smoking status misclassification on the epidemiologic studies of environmental tobacco smoke?

A It's a subtle effect, but it's very real, and it could be devastating, especially in low-level associations, because smokers tend to marry smokers. And nonsmokers tend to marry, or cohabitate with nonsmokers.

And since the basic exposure that you're studying in these studies, or that you're measuring in these studies, and it is environmental, and mostly -- most of these studies have been exposures at the home; then even if there's no relationship, if

there is a certain number of these women who claim to be non- -- lifetime nonsmokers, who at some point have smoked or may still be smoking lightly, they are more likely to have married smokers and to have been classified as exposed.

Q Well, what effect does that have on the measure of relative risk that you obtain when you do these studies?

A It makes them -- it would raise the relative risk, make it artificially high. And that's been recognized by virtually everybody that has studied -- that does these studies.

Q Okay. Are there any other types of bias that you would be concerned about when reviewing the studies of environmental

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tobacco smoke and lung cancer risk?
A Well, one of the things like recall bias.
Q What's recall bias?
A A person is making an honest attempt to answer a question about exposure but just doesn't remember exactly how much he or she has been exposed to. And that would refer to the environmental tobacco smoke exposure of the spouse of the case or of the control.

Q And how would that affect your efforts to assess the relative risk as a measure of association for these studies?
A That would affect it in an unpredictable way. But it would make it -- it would be a source of -- if in the case/control study, a case is more likely to remember that exposure to environmental tobacco smoke than a control, which is not altogether unlikely because they're more sensitized to it. It would again tend to raise the relative risk.
Q Okay. Let's go back to our original question, Doctor. If in the first study you find a relative risk that you believe to be of reasonable strength, that is statistically significant, and you become convinced that biases have been adequately controlled for it in that study, are you ready to reach a conclusion as to whether or not the relative risk is consistent with a causal relationship?
A Again, you should look for what are called confounders.
Q Confounders. What are confounders?
A Confounders are variables, entities that are

associated both with the exposure that you're studying, and the disease that you're looking at.

For example, in environmental tobacco smoke studies, you would look for things like radon exposure. Radon is a cause or one of the causes of lung cancer, one -- I should say one of the things that are strongly associated with lung cancer. And since married people tend to live in the same house, there would be high degree of concordance between the case being exposed to radon and the spouse of the case being exposed to radon. That's one thing.

So is diet. People that marry each other tend to have similar diets. They tend to either be -- have the ordinary, normal American diet, or if one has sort of a high-fat diet, the other would have a high-fat diet. Or if, on the other hand, they're health food addicts and eat a lot of fruits and vegetables and broccoli, they would -- there would be a concordance between the husband and wife; they would both eat it. You generally don't have the

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situation where Jack eats no fat and Jill eats no lean.

And that would tend to, again, raise the relative risk.

Q That's what I wanted to ask you. What's the effect on an epidemiologic study of having confounding in the study?

A If it's a confounder -- if there's confounding in the study, it would also tend to result in an artificially high relative risk.

Q Dr. Levy, how do epidemiologists attempt to assess whether or not confounding is present in epidemiology studies?

A Well, they either design the study beforehand to match on confounding -- on confounders that they think they may be aware of, or else they can do it when they analyze the data statistically.

Q So are there statistical methods available to attempt to adjust for confounders after studies have been conducted?

A Yes, there are many methods.

Q And are those methods capable of fully and perfectly adjusting for confounding in the

data?

A Not fully or perfectly. They can remove some of the confounding.

Q Let's go back to our question, Doctor. If we have a study for which you are convinced the measure of association is strong, statistically significant, and that biases and confounders have been reasonably controlled for, are you ready to reach a conclusion based on that study as to whether or not environmental tobacco smoke is associated with an increased risk of lung cancer?

A No. You would want to look at all -- you've gotten all of the studies; you would want to look at all of the studies in the same way as you did with this one study, and to see whether the results are consistent.

Q So is it correct, then, that you would have to analyze each of the studies using these same criteria to determine whether or not there was a consistency across the studies?

A Yes, you would.

Q Dr. Levy, are these statistical principles that you've identified and explained to the

jury reliable principles for use in evaluating epidemiology studies such as those of environmental tobacco smoke and lung cancer?

A I believe that they are.

Q And are they the statistical principles that epidemiologists such as yourself customarily

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use when evaluating epidemiology studies such as those of environmental tobacco smoke and lung cancer?

A I believe that they are. They might use different terms, but that's what they do.

Q Dr. Levy, let's turn to your evaluation of the environmental tobacco smoke studies. Have you, in fact, analyzed the epidemiologic studies of environmental tobacco smoke using these criteria?

A Yes, sir, I have.

Q I'm going to ask you for a bottom line opinion in a little while, but first, if you would, I'd like for you to walk through these criteria and tell the jury what you found when you applied these criteria to the epidemiology studies of environmental tobacco smoke.

A Okay.

Q Did you obtain all the data?

A I obtained all the data.

Q How did you do that?

A As I've said, I did literature searches, once I got the papers that I thought were relevant, I looked at their references. If they referred to papers that I thought may be also relevant, I checked those out. And I looked at other -- I looked at reviews and I believe I found -- I believe I included all of the present papers. I focused on the U.S. studies, because this case involves ETS in the U.S. And I believe I have looked at all of the studies that have been conducted from -- from the time the first one appeared in the early '80s until just recently.

Q Dr. Levy, did the epidemiology studies of ETS that you found contain relative risk estimates for different types of ETS exposures?

A Yes.

Q And what types of ETS exposures did these studies have risk estimates for?

A Mainly household exposure, and that was

broken down often into childhood and then adulthood. And adulthood, primarily spouse and other members, and some of them had workplace exposures.

Q So is it correct then that the studies had different relative risk estimates for household exposure versus workplace exposure?

A Some of them did. Some of them had no workplace exposures. Most of them -- in fact, all of them had household exposures.

Q Okay.

A Of the ones that I'm talking about.

Q Let me ask you first to talk about the residential exposure data. Did you evaluate whether the relative risk found in the

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residential exposure studies satisfied the criterion of strength of association?
A Yes.
Q And did you prepare an illustrative exhibit in that regard, Doctor?
A Yes.
Q Would that be in assistance of explaining your analysis to the jury?
A Yes.

MR. FURR: With the Court's permission, I'd ask the doctor to step down and use his exhibit.
THE COURT: Go ahead.
MR. FURR: Your Honor, I believe we provided copies of these.
THE COURT: You did.
Q Okay, Dr. Levy, could you use your exhibit to explain to the jury what you found regarding strength of association.
A I guess it can be seen better if I stand here.
Q Sure.
A There were 16 studies that provided household relative risks. And of these 16, four showed relative risk below 1, which if you believe, it actually means that ETS had a protective effect from lung cancer. Seven of them were between 1 and 1.5, two were between 1.5 and 2. And I should add that, in the most recent review by the Environmental Protection Agency, they estimated a relative -- actually, in this level, around 1.2.
Q Around 1.2?

A Yeah.
Q This was the EPA's estimate?
A EPA, of their '92 report which is --
Q And how did the EPA derive that estimate of 1.2?
A From looking at a subset of these that were available at that time.
Q Did the EPA use a particular statistical technique to derive that estimate?
A Yes, meta-analysis.
Q Meta-analysis. Let me stop you while you're up. What is meta-analysis?
A Meta-analysis is a way of, when you have a whole group of studies like these 16, to put all of them together and get an overall average, an overall, best estimate that you can, of the overall relative risk based on the information from this set of studies.
Q What exposure did the EPA's estimate of a relative risk of 1.2 using meta-analysis, apply to?
A Household exposure.
Q Household exposures?
A Household only. They didn't look at workplace. I think I -- I didn't mention

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that of these 16, only three were above 2, had relative risks above 2, so all of them would be -- all but three would be considered very weak associations.

Q Okay. Thank you. You can sit down.

A Okay.

Q Let me ask you, make sure I heard you, did you say that 13 of the 16 would be considered very weak associations?

A Would be considered weak associations.

Q Dr. Levy, did you also assess whether or not the epidemiology studies involving residential exposures were statistically significant?

A If I remember -- well, I think all but one of them were not.

Q And was this the same 16 studies that we looked at here?

A Yes.

Q And is it your testimony that 15 of the 16 were not statistically significant?

A Yes. I'm pretty sure of that. The one by Fontham may have been.

Q Okay. And what statistical significance level did you assess the statistical

significance of these studies at when you made your evaluation?

A 95 percent.

Q You told us that's the traditional level for assessing statistical significance?

A That's considered the usual standard.

Q Dr. Levy --

A If one doesn't use it, one usually has to explain why they didn't use it.

Q The third statistical principle you described for us was the principle of whether or not bias had been adequately controlled for in the studies; is that correct?

A Yes.

Q Did you evaluate the control of bias in the studies of ETS and lung cancer?

A Yes.

Q And what did you find in that regard, Doctor?

A Well, the major bias that, the misclassification bias, was not adjusted for in any of the individual studies.

Q This is the smoking status misclassification bias?

A Yes.

Q And to refresh us, what is the effect of not adjusting for the smoking status misclassification bias on an individual study?

A The relative risks that are expressed in the individual studies are higher than they

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should be.
Q Did you assess whether or not the individual studies controlled for the bias that you described for us known as recall bias?
A No, they didn't.
Q Did any of them control for recall bias?
A As I recall, I don't think they did.
Q Okay. Dr. Levy, did you also assess whether or not the epidemiologic studies of environmental tobacco smoke and lung cancer controlled adequately for confounders or potential confounders?
A Some of them did for some confounders, some of them did for other confounders, some of them did no control for confounders. As far as I remember, none of them controlled completely for -- well, it's hard to control -- none of them controlled for all

of the confounders.
Q Dr. Levy, in your opinion, were confounders controlled for adequately overall in the studies collectively?
A No.
Q In particular, what confounders would you be concerned about, Doctor?
A I would be concerned about the ones that I mentioned, socioeconomic status. I'd be concerned about exposure to radon, I would be concerned about history of previous lung disease which has been found to be a risk factor, and I would be concerned about especially nutrition, dietary intake of vegetables, dietary intake of fat, which have also been shown in some studies to be associated with lung cancer. Only one, I believe, controlled for diet.
Q Dr. Levy, what would the potential impact be on the measures of relative risk in the residential epidemiology studies by failing to adequately control for confounders?
A Well, since they're associated with both the exposure and the disease because of the spousal proximity, they would result in an

overstated relative risk.
Q Dr. Levy, the last principle you told us about was consistency; right?
A Yes.
Q Did you evaluate whether or not the results obtained in the residential environmental tobacco smoke studies provided a consistent pattern of results?
A There was some consistency. You've seen the results. All of them are weak, except three. Three are maybe moderate. Some of them are less than 1; some of them aren't. But most -- 7, 10, 12 of the 16 are in a positive direction, greater than 1, but -- so there is some consistency.
However, because of that systematic

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bias where they should be greater than 1 because the bias is present, I would put less stock in the consistency than I would if bias and confounding were not present.

Q Okay. Dr. Levy, I want to ask you the bottom line opinion that we've been building up to, and that is this, Doctor: Based upon your 35 years of teaching and researching as an epidemiologist and your review of the

epidemiologic studies of environmental tobacco smoke and lung cancer risk, including the application of these statistical principles that you've described to us, do you have an opinion that you hold with a reasonable degree of scientific certainty as to whether or not the residential epidemiologic studies of environmental tobacco smoke and lung cancer are consistent with a causal association?

A Yes, I do.

Q And what is that opinion?

A My opinion is that based on the presence of bias and confounding on the weakness of the association that makes them especially fragile with respect to this, my opinion is that they give very little or no evidence of a causal relationship between environmental tobacco smoke and lung cancer. In other words, they furnish no evidence that one can rely on.

Q Doctor, let me get another board and go to a new topic.

A Okay.

Q Doctor, you told us that the studies in

addition to having relative risk estimates for residential exposure to environmental tobacco smoke, the studies also had relative risk estimates for workplace exposure; is that correct?

A Yes.

Q Dr. Levy, could you briefly explain how the relative risk estimates were derived for workplace exposure to environmental tobacco smoke.

A Pretty much in the same way, except spouses were not used. One asked the person, the case or the control, if we're dealing with a case/control study, whether they were exposed to environmental tobacco smoke in the workplace. And if so, there was an attempt to estimate quantitatively how much. And it was generally whether in terms of number of years in a particular workplace, wasn't truly quantitative. They were not -- monitors were not put on them, obviously. So it was by interview.

Q Okay. Well, Doctor, I take it that you evaluated the measures of association found in the workplace studies separate from your

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evaluation of the measures of association found in the residential studies; is that correct?
A Yes, I did.
Q Why did you do that?
A Because, for one thing, they're different exposures. Although this is not my area of expertise, the levels of exposures are different. Also, they're at the workplace less time than they are at the home generally, and also this particular case, I believe, involves workplace -- workplace exposure only. I believe that the lady in question was a nonsmoker.
Q Let me ask you about that.
A And was married to a nonsmoker.
Q For evaluating the likelihood that workplace exposure to environmental tobacco smoke contributes to lung cancer risk, do you have an opinion as to whether the relative risk estimates from the workplace studies or the residential studies would be most relevant?
A If we're looking at workplace expose -- exposures in the workplace only, obviously, the workplace studies would be the most

relevant.
Q Doctor, did you evaluate the workplace studies using the same criteria that you used to evaluate the residential studies?
A Yes, I did.
Q Okay. Could you tell the jury what you found in that regard, please.
A I believe I looked at the same 16 household -- U.S. household studies. Of these, 14 reported workplace -- reported workplace exposure.
Q Dr. Levy, let me stop. Sorry to interrupt you. Did you prepare a demonstrative exhibit to use to explain to the jury your analysis with respect the strength of the association for workplace studies?
A Yes.
Q Again, with the Court's permission, I'm going to ask you to step down and use this chart to explain your analysis.
A Fine.
Q These are the workplace studies we're talking about; right?
A These were the ones that reported relative risks. Just to get back to where I had

started from, we had started with the same 16 studies. Of those, 14 mentioned workplace exposures. Two said that they were non-significant, did not report an actual value of a relative risk. That left 14. Three of the studies reported, I guess, in males only. And so we were left with 11

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studies in females that had workplace relative risks reported. And these were the values of relative risk. I guess one of the female studies did not report it.

So we had 10 that reported relative risks. Of these, four were less than 1, five were between 1 and 1.5, one was between 1.5 and 2, and you can see that these are lower than the distribution that we saw for the household exposures.

Q So Dr. Levy, how would you characterize the strength of association reported for workplace ETS exposure and lung cancer risk?

A Very weak. Weaker than the household.

Q Dr. Levy, you told us that the Environmental Protection Agency used a statistical technique known as meta-analysis to combine the residential studies; is that correct?

A Yes.

Q Dr. Levy, have you used meta-analysis to combine the workplace epidemiology studies?

A Yes, I did.

Q Have you prepared an exhibit in that regard?

A Yes.

Q Would that exhibit be of assistance to you in explaining your meta-analysis to the workplace studies?

A Yes, I think it would.

Q Dr. Levy, I'm going to ask you to use the exhibit that you prepared and explain to the jury what you found when you meta-analyzed the workplace studies of environmental tobacco smoke exposure and lung cancer risk.

A Okay. Basically I did it three ways and each way came up with essentially the same thing.

Some of the studies produced relative risks that didn't control for confounders. Some did. And if -- and some did both.

There were ten of them that had either relative risks unadjusted for confounding or relative risks adjusted for confounding.

The first method I took these -- I

combined, did a meta-analysis on these ten studies. If they -- if they had both a relative -- an adjusted and a crude, I used the crude, because that was generally the highest. I wanted to be conservative, and if they just had one and not the other, I used whatever they had. So this is probably the most inclusive way of doing it. And I came up with a -- do you want me to explain?

Q Please, describe the results you obtained when you meta-analyzed the workplace studies.

A It came up -- the meta-analytic relative risk, the average of all of them, was 1.01, which is very low association, and it's not statistically significant, because you can

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see, the 95 percent confidence interval overlaps the value 1.
Q Let they stop you there, Doctor. When you calculated this relative risk of 1.01, did you make any correction for biases and confounders that you believed need to be made?
A No.
Q Okay.

A No. This is what they had.
Q And what was -- what was the second meta-analysis that you conducted?
A The second one was based on, I believe, all the crude relative risks, and there were nine -- eight studies that had -- eight case/control studies that had crude relative risks. And I did them separately because, since the cohort of a case/control study -- there was one cohort study that reported a relative risk; I did not include that. These are just the eight cohort studies that reported crude relative risks, and one comes up with a relative risk of 1.
Q Of 1.0?
A No association.
Q That's what I want to ask you. What is -- I think you told us earlier, but what's the interpretation of 1.0 as a relative risk?
A That means those that were exposed to ETS had no greater risk of lung cancer than those that did not.
Q And this was for being exposed in the workplace?
A For being exposed in the workplace, yes.

Q And I take it you performed a third meta-analysis.
A This included the eight case/control studies and the one cohort study. And one comes up -- the one cohort study was very small. I think there were -- although they started with a lot of people, they only found seven or eight cases, so it's basically the same. The same value and the same confidence interval, and it also shows no association.
Q Okay. Have a seat, please.
A Thank you.
Q Dr. Levy, I want to ask you for your second bottom line opinion, and that is, Doctor, based upon your 35 years of teaching and research as an epidemiologist, and upon your evaluation and meta-analysis of the U.S. workplace ETS studies, do you have an opinion that you hold with a reasonable degree of scientific certainty as to whether those studies demonstrate an increased risk of lung cancer for being exposed to environmental tobacco smoke in the workplace?
A Yes, I do.

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Q And what is that opinion?
A My opinion is that on the basis of these studies, one cannot -- one cannot conclude -- one cannot conclude that there is a relationship between environmental tobacco smoke and lung cancer.
Q Okay. Go to a new topic, Doctor.
Dr. Levy, are you familiar with the concept of attributable risk?
A Yes. I think you might need an I between the R and the B.
Q I'm sure you're right. Okay?
The jury has heard this, about this concept before, but could you explain to us what the concept of attributable risk means?
A Yes, it's a concept used in epidemiology, and it measures the impact, or the effect of an association between a risk factor on -- and a disease on the occurrence of the disease.
In other words, it measures what proportion of all people who get the disease and are exposed to the risk factor, what proportion of all such cases can be attributable to the risk factor.

Q Okay. And is there a mathematical formula that is used to calculate attributable risk?
A Yes.
Q What is that formula, Doctor?
A Do you want me to put it up or do you want --
Q I'll try, if you give it to me.
A Okay. AR, we'll call attributable risk.
Q Okay.
A And that would be equal to the relative risk minus 1 over the relative risk.
Q Both terms over the relative risk?
A Both terms over the relative risk. And if you want to express it as a percent, you can multiply that by 100.
Q By 100?
A Correct.
Q Dr. Levy, you've told us that you don't believe that the meta-analysis of U.S. workplace studies demonstrates an increased risk of lung cancer for that exposure; is that correct?
A Yes.
Q Notwithstanding that reservation, I'd like to ask you to perform an attributable risk

calculation for us using your meta-analysis result of 1.01, and explain to the jury what that means.
A Okay. That's a pretty easy calculation. What you would do would be to subtract 1 from 1.01, which gives you .01, divide it by 1.01, which is the relative risk, and

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multiply it by 100, which gives you approximately 1 percent.

Q And what is the interpretation of the attributable risk of 1 percent that you just calculated, Dr. Levy?

A It means if you have essentially -- essentially if you have 100 women with lung cancer that are nonsmokers, and had no exposure in the household, but were exposed in the workplace, 100 of these women who had that type of exposure, and had lung cancer, only 1 of these 100 would be attributable to that exposure, if that exposure really were -- if that relative risk were really true.

Q So if this risk were true, 99 out of 100 of the cases would have lung cancer attributable to some other exposure.

A To one of the several other causes that are -- that have been found to be associated with lung cancer in nonsmoking women; such as diet, radon, previous history of lung disease, that type of -- the type of lifestyle and previous disease exposure.

MR. FURR: Thank you, Dr. Levy. That's all I have now, Your Honor.

THE COURT: All right. Mr. Motley.

MR. MOTLEY: Mr. Patrick is our resident epidemiologist.

THE COURT: All right. Thank you, Counselor. Mr. Patrick.

MR. PATRICK: Thank you, Your Honor.

MR. MOTLEY: The reason is obvious why I'm not, Your Honor.

CROSS-EXAMINATION

BY MR. PATRICK:

Q Good afternoon, Doctor.

A Good afternoon. I didn't hear your name, I'm sorry.

Q Doctor, my name is Charles Patrick. I'm

going to be asking you some questions about your testimony today.

A Okay.

Q I don't believe we've met previously, have we?

A To my knowledge, we have not.

Q All right. You were not -- I think the jury has heard the term deposition. Some of the witnesses were deposed in this case. I don't believe your deposition was taken, was it?

A No, not on this.

Q And I think I heard you say that this was the first time you've testified in a tobacco case. Is that correct?

A Yes.

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Q Now, Dr. Levy, I believe I heard you say that you've been an epidemiologist now for about 35 years; is that correct?
A Yes.
Q And I'm looking at some of your biographical information. Would it be correct to say that -- are you 61 or 62 years of age at this time?
A I'll be 62 in May.

Q And you became an epidemiologist, or at least you received your degree in biostatistics in 1964?
A Correct.
Q And that was at where?
A Johns Hopkins.
Q Johns Hopkins. Now, in 1964, there was an event that occurred as far as tobacco health-related matters were concerned. Do you recall that?
A Yes.
Q You recall that the Surgeon General of the United States issued a report in 1964 that stated -- concluded that cigarette smoking was a cause of lung cancer? Do you recall that?
A I recall that.
Q And that was at the same time you received your degree in biostatistics from Johns Hopkins; correct?
A (Affirmative nod)
Q All right. Now, Doctor, at that time, did you accept the Surgeon General's conclusion that cigarette smoking among active cigarette smokers was a cause of human lung

cancer?
A I don't remember -- I don't remember whether the Surgeon General's report came out while I was still a student or whether I had graduated. And I don't remember seeing it when I was a student. And at that point, I don't remember -- this was my second year in graduate school at Hopkins. I don't remember having read the report at that point or the -- or having reviewed in any thorough kind of way the studies that that was based on, which were, I believe, the three major studies that were available at the time; the British doctors' study, the VA study, and I can't recall what the third one is.
Of course, it was not the Surgeon General's report, but the findings of those studies, or at least the preliminary findings, I don't remember when they were published, were pretty well known by that time, I believe.
Q Well, this was a publication issued by the Surgeon General, who at that time was a Luther Terry in 1964. It got -- you

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remember when it came out?
A I remember it came out in 1964. I don't remember that I was a student at the time, or I may have just graduated. I graduated by June. I don't remember if you were asking me whether I saw it as a student. I can't -- I can't recall whether I did or not. I've certainly seen it since. But was that what you were asking me, whether I was --
Q I'm going to get to that.
A Okay.
Q But I think you said that between 1960 and '62, you worked for the Centers for Disease Control?
A No. Yes, you're correct. Yes.
Q All right. Which was a part of the Department of Health, Education and Welfare at that time?
A Yes, at that time, that's what it was called.
Q And this document was actually issued by the United States Public Health Service which was a subdivision of the United States Department of Health, Education and Welfare.

Isn't that correct?
A Yes, that's correct.
Q So who you were working for two years before this was issued, this was -- this came out of the same, basically the same agency?
A It didn't come out of CDC. I believe it came out of the office of the Surgeon General. It came out of the same department.
Q Right.
A Okay?
Q Public Health Service, United States Public Health Service.
A Yes, okay.
Q Now, as an epidemiologist, this was a major fundamental piece of work as far as statistical analysis of health surveys was concerned; isn't that correct?
A Of health what?
Q Health surveys.
A Okay. Of observational studies.
Q Right.
A Yeah.
Q Case/control studies as well as cohort studies; correct?

A Correct. Correct.
Q And the question to be determined at that time, that the Surgeon General was analyzing, was based on all of the data, all of the studies, like the British Doctors' study, and the other studies that had been taking place, whether or not cigarette

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smoking was established as a cause, a cause of human lung cancer; correct?
A Correct.
Q And subsequently you have come to know and to read and to understand the study as an epidemiologist; isn't that correct?
A Not so much that particular study, but the studies upon what that review and analysis and conclusion were based on. Okay?
Q Doctor, did there come a time that you came of the opinion, based on whatever studies that existed in the health literature, that cigarette smoking was established as a cause of human lung cancer?
A Active smoking, you're talking about?
Q Active smoking.
A Yes. I can't remember at what point. At some point I read the studies. Before --

even before I read the actual studies, I was aware of the work that had been done. And it was certainly the opinion of my teachers at the School of Public Health and Epidemiology that this is what the Surgeon General was going to come out with and that cigarettes, active cigarette smoking was a risk factor for lung cancer.
Q I guess my question is: Dr. Levy, since 1964, you came of the opinion or developed the opinion that cigarette smoking caused lung cancer; isn't that correct? Your opinion.
A At some point, and I can't say -- if you're -- if you want a time line, I can't give it to you exactly, but yes, at some point during my career, and probably earlier than later, I had reviewed what literature was available then and came to that -- came to that opinion.
Q Do you recall approximately when?
A No, I don't, because at that point I was doing other things. I was trying to get my thesis published. I was trying to get a job. I wasn't a researcher in either lung

cancer or the effects of tobacco smoking on anything else.
Q All right. The reason I ask you that, it is true, is it not, that if cigarette smoking, active cigarette smoking, doesn't cause lung cancer, then we really don't even need to analyze, through meta-analysis or through any other device, whether or not environmental tobacco smoke is a cause of lung cancer; correct?
A You're saying if tobacco -- if active smoking is not associated with it, why should environmental tobacco smoke be associated with it; is that what you're asking me.
Q Well, if --

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A Yeah.
Q If active cigarette smoking doesn't cause lung cancer, then environmental tobacco smoke, we don't even need to look at that issue; correct?
A You would probably not look at that issue.
Q But we do know now, and we knew in 1964, or at least the Surgeon General had established, that cigarette smoking did

cause lung cancer; correct?
A On the basis of a committee of scientists that reviewed the literature, yes.
Q Now, Dr. Levy, over the weekend break you -- you talked about Medline; correct?
A Uh-hum.
Q Computer analysis?
A Uh-hum.
Q And there's a database of medical articles you can get on certain issues that pertain to medical articles and things of that nature; correct?
A Correct.
Q And I asked someone to research and get, obtain a list of medical articles that your name appeared on, and I believe it goes back to 1968. And let me just ask you whether or not it would be generally correct that we obtained a list of 73 articles since 1968. Does that sound about right?
A I have no idea how many, but since '68? That are --
Q Published medical articles.
A -- published that have -- that are abstracted by the Index Medicus, I'm sure if

you did it, that's what you obtained. If you used both Paul S. Levy, Paul Levy, it depends on what you put, in, okay?
Q Exactly.
A I can't tell you if it's correct, but it might be. I don't know.
Q Well, would it be correct to say that of the articles that you published in the medical literature since 1968, that very few, if any, concern the issue of cigarettes or tobacco usage or smoking?
A That would be correct.
Q In fact, in looking at this list, I did not see any article that concerned the issue of tobacco; correct?
A You might be. I don't recall having written an article on -- or having co-authored an article on tobacco smoke, but somewhere within the 160, 170 publications there may be something there that I was a fifth or sixth author on that I've long since forgotten about. But you're generally correct. I will accept that.
Q Would I be generally correct if I said that I could not find anything that you had

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authored on the issue of passive smoking?
A Correct.
Q Or environmental tobacco smoke?
A Yes.
Q So the opinions you expressed today on direct examination by Mr. Furr, those are opinions that you have not written down or at least you have not published in the peer-reviewed medical literature; is that correct?
A That's correct.
Q And, in fact, the first time that you even analyzed this question as to whether or not environmental tobacco smoke is a cause of lung cancer is at the instance of the lawyers representing the cigarette companies; isn't that correct?
A Yes.
Q And when were you first contacted to engage in this research project to look at the medical literature so as to determine whether or not environmental tobacco smoke was a cause of lung cancer?
A Sometime September or October. I don't remember the exact date.

Q September or October of 1997?
A Correct.
Q Would it be fair to say that before September or October of 1997, you were not an expert in this field, that is, looking at the question of whether or not ETS is a cause of lung cancer?
A I would say it's correct that I was not an expert in that substantive field, but I consider myself an expert in reviewing and analyzing and interpreting and synthesizing epidemiologic studies on a particular topic, from the point of view that I --
Q I understand that. I'm not quarreling with your qualifications as an epidemiologist generally.
A Okay.
Q But if I came to you in August of last year, and I said, Dr. Levy, can you give me an analysis of all the medical literature that exists on the hazards of environmental tobacco smoke as it relates to lung cancer, you would have to say, I don't know; I would have to look. Isn't that correct?
A Right. I had, of course, during the course

of teaching read some of the studies, but yes, I would have to have looked to see what's there, what's out there.
Q Now, Dr. Levy, in looking at the medical literature, have you become familiar with a report that was issued in September of 1997 by the California Environmental Protection

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Agency entitled, "Health Effects of Exposure to Environmental Tobacco Smoke"?
A I have looked at it. I haven't reviewed it thoroughly.
Q Are you aware that there was a process by which this publication was put together so that there would be comments, both from public health groups and the tobacco companies, as to whether or not whatever data, whatever opinions are contained in the final publication, are valid and correct?
A No. No. I really did not review that thoroughly. I'm not an expert on that particular document. I would have to spend some time looking at it to be helpful to you.
Q Are you familiar with a Dr. Richard Carchman?

A I don't think I am. Could you spell his name?
Q C-A-R-C-H-M-A-N?
A C-A-R.
Q C-H?
A T-H.
Q M-A-N?
A Carchman.
Q Carchman?
A Carchman?
Q Carchman.
A No.
Q I think he's going to be --
A No, I'm not.
Q So you don't know whether or not Dr. Carchman, who may or may not be affiliated with Philip Morris, had a chance to offer extensive comments to this particular volume.
A No.
Q Dr. Levy, are you aware that in this report by the California EPA, after they looked at all of the available literature on environmental tobacco smoke, whether or not they concluded that environmental tobacco

smoke was a cause of lung cancer?
A Is that the same report you're talking about?
Q Same report I just asked you about.
A I believe I looked at it and saw that they did.
Q And, in fact, Dr. Levy, isn't it correct that this report also looked at the same occupational studies, or the studies that analyzed whether or not exposure to environmental tobacco smoke in an occupational setting could cause lung cancer, and they concluded in this report that occupational environmental tobacco smoke exposure was a cause of cancer, lung cancer?

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A I'm not -- okay. I'm not sure it's the same thing. Again, I didn't focus on that particular document. I focused on the original studies that had workplace, exposures. I think occupational studies may have been something different. You'd have to show me whether they looked at the same studies that I looked at.

MR. PATRICK: Your Honor, may I

approach?

THE COURT: Yes.

Q If you just look at the highlighted section, and if you could read it, wouldn't you agree that it looked at many of the studies that you discussed, the ones that are in the medical literature, and concluded that workplace exposures also caused lung cancer?

A Okay. They mention Wu, which is one of the studies I looked at, Wu Williams which is a study -- I looked at studies in the United States. Wu Williams, I believe, was in China, Hong Kong, or something like that. Fontham I looked at; that's three. Okay. Basically this highlighted section is talking about the Fontham study.

Q Right. And you looked at the Fontham study, did you not?

A Yes.

Q And the Fontham study is the largest study, had the most people included in that study of any environmental tobacco smoke study that we have; isn't that correct?

A In the U.S.

Q In the U.S. It is a multi-center study;

isn't that correct?

A Yes.

Q So they looked at individuals in Atlanta, they looked at people in Houston, they looked at people in Los Angeles, they looked at people all over the country; and then they combined that to try to determine, in the Fontham study that was published in 1994, whether or not environmental tobacco smoke was a cause of lung cancer; correct?

A Correct. That's the largest in the United States, but it's not the only study.

Q Right. Doctor, would it be true that if you took all the people in the Fontham study and you put them next to all the people that you added up in all the other studies in the U.S., Fontham would even be more or almost as many as the people in all those other studies?

A I haven't counted -- I haven't counted the others and then compared them with Fontham. I can't answer that as you stated it, because the Bronston study had a lot of people, the Stockwell study did, the New York study, New York State study had about

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100, so --
Q Why don't we look at Fontham, because rather than looking at that EPA report, let's look at something you've actually analyzed.
A Incidentally, Fontham was included in my meta-analysis of workplace and spousal studies.
MR. PATRICK: Your Honor, may I approach?
THE COURT: Go ahead.
Q If you'd look, this is a copy of the Fontham study here. I can take the EPA document, if you'd like.
A That indeed is the Fontham study.
Q All right. Doctor --
A The second Fontham study.
Q The second Fontham. There's one in 1991, and I believe there was this one in 1994.
A Right.
Q Correct?
A The '91 was not included in my analysis, because it's basically an earlier report of the same data.
Q All right. If you'll just look at the beginning, look at the first page, there's

the objective, design, setting, patients or other participants, main outcome measure, results; and then just look at the conclusion, bottom line conclusion. If you'll agree that I'm stating it properly, "Exposure to ETS during adult life increases the risk of lung cancer in lifetime nonsmokers." Correct?
A Yes. That was their conclusion on this basis of one study.
Q And this was a study that appeared in the Journal of the American Medical Association in 1994; isn't that correct?
A That's correct.
Q And if you look at the table on page 1756, and it's under --
MR. PATRICK: Your Honor, may I display this on the Elmo, since he's recognized it? He's analyzed it. If we can get the television working, we can maybe all see it.
Q Doctor, this is a -- first of all, this was a study of nonsmoking women who were exposed to environmental tobacco smoke; correct?
A Uh-hum.

Q And if you look at the graph, the chart, excuse me, occupationally -- occupational exposure, ever exposed, that if you were exposed from 1 to 15 years, you had an odds ratio of a relative risk of 1.30, relative risk that you were talking about earlier today. If you were exposed for more than 16

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and up to 30 years, you had a relative risk of 1.40. And if you were exposed for more than 30 years, you had a relative risk of 1.86. Correct?

A Uh-hum. That's what she found.

Q And if you, among those nonsmoking women who had adenocarcinoma, if they were exposed from 1 to 15 years, they had a risk of 1.36; 16 to 30 years, 1.49; and over 30 years, 1.87. Correct? That's what the authors found.

A Uh-hum.

Q And the authors of this study concluded that that risk was significant, did they not?

A Yes.

MR. PATRICK: Your Honor, I'm going into another area. We can break now, or I can proceed on?

THE COURT: Go ahead for a while.

Q Now, Dr. Levy, I believe you testified on direct examination that you spent approximately 140 hours doing your research; is that correct?

A I'm not sure of the exact number. I didn't take it with me. Something like 130, 120 to 140, that order of magnitude.

Q A low of 120 or a high of 140?

A Correct.

Q And you charge, I believe, or did charge, or are going to charge, $275 an hour?

A Have and I'm going to charge.

Q How much money have you received from this particular research project?

A So far, about $20,000.

Q And if my math is correct, and I'm not -- I don't vouch for it, but let's assume that you spent a high of 140 times 275, would it be correct that you're going to receive approximately $38,500? Is that a correct mathematical --

A Yeah. About that.

Q All right.

A Order of magnitude, anyway.

Q All right. Do you know a Dr. David Burns?

A I don't know him, no.

Q Let me represent to you that he was a consultant to the EPA report in 1992. Does that refresh your recollection as to who he might be?

A I think so. I think I looked at the names. I didn't know most of the people but basically concentrated on the findings.

Q You realize in looking -- you looked at the EPA report, did you not?

A Yes.

Q Did you study it carefully?

A I think I did. The parts that were relevant to my analysis.

Q Did you look to see if there was a

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Scientific Advisory Board to the Environmental Protection Agency of individuals who were involved, actually involved in analyzing all this data, much like you did on your own?

A Yes, I did. I didn't pay too much attention as to -- I didn't concentrate on it that much, on that aspect of it, because my job was to just look at what they did, what they

found, and to evaluate the significance of their findings and the problems, if any, with their interpretation of the findings.

Q Well, see -- I don't mean to cut you off. I see that Dr. Burns was a consultant to the Scientific Advisory Board along with another name that we've heard in this courtroom, Dr. Geoffrey Kabat. Do you know Dr. Kabat?

A I don't know him personally. I know certainly by now some of his work on ETS. And I've seen some of his work on other studies -- other topics. He's at the American Health Foundation.

Q I'm just counting the number of people that were involved either as members of the Scientific Advisory Board or consultants to the Scientific Advisory Board. I believe there were 18.

A Uh-hum.

Q And were you ever contacted to be involved in this report, to contribute to the report?

A No.

Q Since the publication of this report, have you contacted any of the members of the committee or Scientific Advisory Board to

offer your comments and suggestions regarding your own conclusions?

A No. I don't think that's -- I don't think that -- first of all, I only got into it just this recently, and that report is more or less based on 1992 data. I should say on '90 -- on what was available in 1992.

Q Doctor, let me show you a graph that we prepared.

MR. FURR: May I see it, please?

MR. PATRICK: Sure.

Q Doctor, you see where I've taken the various reports of the various agencies that have looked at the issue as to whether or not environmental tobacco smoke causes lung cancer and basically have just simply put their bottom line conclusions on a graph. And you recognize these agencies as agencies that have looked at this particular issue?

A Uh-hum. Yes.

MR. PATRICK: Your Honor, we'll mark this as the next exhibit for identification purposes. I believe it's 88.

MR. CASSELL: 89.

THE COURT: 89.

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MR. PATRICK: And if I could display it on the screen.

MR. FURR: Your Honor, I think I'd object to that now. If the doctor recognizes each of these as a learned treatise, he can be cross-examined with them, but I don't think it's appropriate to display these to the jury at this point.

MR. MOTLEY: Your Honor, that's not correct. The rule says if anybody has recognized it as learned treatise, you can use it. These documents were all used in our case in chief, recognized as learned treatises by Dr. Burns.

MR. WAGNER: It's hearsay, Your Honor.

MR. MOTLEY: It's not hearsay, Judge. It's a rule specific to learned treatises.

THE COURT: Counselor, tell me your plan. Are you offering it, the document itself, into evidence, or are you just publishing it to show the jury upon what he may have relied?

MR. PATRICK: Just upon what he may

have relied. I'm not offering it into evidence.

MR. FURR: May I approach, see what we're talking about?

THE COURT: Please. Thank you.

Objection sustained.

Q Let me just ask you, without making any particular reference to the graph, you have come to understand, based on your medical research, that the Surgeon General in 1986 concluded that environmental tobacco smoke was a cause of lung cancer; correct?

A On the basis of the data that were there then, and again on the basis of interpretations of the studies that were there at that time as interpreted by a committee.

Q And in 1986 the National Research Council for the National Academy of Sciences also came to the same conclusion.

A Pretty much on the same body of work that was there at the same time. And there were much fewer studies then than there are now.

Q We've talked about the Environmental Protection Agency. The National Institute

for Occupational Safety and Health, do you know what that institution is?

A Yes, I do.

Q And do you know that in 1991 they came to the same conclusion?

A I think they didn't do their own study. I think it may have been on the basis of one

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of the ones you just mentioned, probably the EPA study.

Q And the American Thoracic Society in 1996 also came to the same conclusion, including the conclusion that occupational exposure was a cause of lung cancer; isn't that correct?

A I don't know if they did or not. I'm not aware that they did, but if they did, I don't believe they published a study of their own or a review of their own. This was probably based on one of the EPA -- I forgot the date you mentioned they did that, but it was possibly based on one of the -- the EPA or the Surgeon General's Report. It's not an independent conclusion based on a review of their own, to my knowledge.

Q And the American Cancer Society came to the

same conclusion in 1997. Do you know if they came to the same conclusion?

A I don't know whether they did or not. I would have to see it.

Q And it's something you just haven't looked at in your medical research.

A I haven't seen it.

Q The American Lung Association is also of the same view?

A I'm sorry?

Q The American Lung Association is also of the view that environmental tobacco smoke is a cause of lung cancer?

A I don't know. Again, I know of no independent analysis of the human studies, either the spousal or the workplace, that they've done and published separately.

Q What about the American Academy of Pediatrics in 1997; do you know what their opinion is?

A No, I don't know what their opinion is and I'm not aware of any independent study or review that they did.

Q And you told us that you were not that familiar with the California Environmental

Protection Agency study; is that correct?

A No. No.

Q Are you aware that it was published in September of 1997?

A Yes.

Q Now, are you aware that in 1996 that your alma mater, Johns Hopkins, issued a report on the health effects of various substances, and also concluded that passive smoking was a cause of lung cancer?

A I'm not aware of it, and I don't know what the base -- whether that's based on an independent study or it's based on the same data that were -- I forgot, whatever was available at the time, or based on -- I don't know what the basis of their

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conclusions was, in other words.
Q Are you familiar with Dr. Jonathan Samette (phonetic) at Johns Hopkins?
A Yes.
Q Are you aware that he is of the opinion, and has published, that environmental tobacco smoke is a cause of lung cancer?
A I don't know what he has said in public. I believe he's the author of one of the

studies or co-author of one of the studies that were included in my meta-analysis of the workplace or of the spousal studies.
Q Now, let me show you a document and ask you if you can identify it. We'll mark this one as Plaintiffs' 90 for identification.
THE COURT: I believe it would be 91, Counselor. 90 has already been used.
Q Are you familiar with this document I just handed you, Plaintiffs' 90? 91, I'm sorry. It's getting late in the day.
A Looks like it comes from my own institution, and I'm not aware, and I doubt whether they've made any independent studies of the same thing.
Q Well, are you aware that at the University of Illinois-Chicago, that there is -- that they, they stated in this document that compelling evidence now exists that links long-term exposure to secondhand smoke with increased health risks for nonsmokers. Do you see that?
A I know there's a -- yes, it does say that. I don't know what the basis of their conclusion is, whether it's an

independent -- based on an independent study. I don't think that it is. I'm not going to speculate on what it's based.
Q It's something you didn't have any participation in, I take it?
A I had no participation in it.
Q But you are aware that the University of Illinois-Chicago has a smoke-free environment and a smoke-free policy.
A We've had a smoke-free environment since 1972 when the first dean created a smoke-free environment. And I'm heartily supportive of it. I think it discourages active smoking. I think it limits smoking in the workplace. And I think it -- I think it's a good thing in many ways, but primarily it limits the amount of active smoking, and a lot of people, I think, including myself, don't like to be around smoke.
Q Do you believe that there are any health hazards to exposure, to be exposed to passive smoke?
MR. FURR: Excuse me, I object, Your Honor, as going beyond the scope of

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direct, if we're talking about health hazards other than lung cancer.

MR. PATRICK: Your Honor, it goes to --

THE COURT: Overruled. Go ahead.

Q Do you believe that there are other health hazards, or any health hazard, for that matter, by being exposed to secondhand smoke?

A I've looked at the data on lung cancer, you've heard my opinions on that. I haven't looked at the data in a systematic way, or hardly at all on others, and I'm not going to venture an opinion on health hazards related to other diseases. I was dealing exclusively with ETS and lung cancer.

Q Now, Dr. Levy, you've been the author, as I believe you stated on direct examination, of a number of epidemiological studies; isn't that correct?

A Uh-hum.

Q And do you recall that in 1993 -- 1994, excuse me, that you published an article in the Journal of Clinical Epidemiology entitled, "Alcoholic Beverages and Breast

Cancer: Some Observations on Published Case/Control Studies"?

A Yes. I was a co-author.

Q I believe you were the second author on this?

A Yes.

Q And this was an original study, or excuse me, this was -- was this a review study, a review of all the literature?

A We did no original studies on the topic. This is a review of what was there at the time.

Q And so what you did here, or for your testimony here, which was to review all the literature that exists on environmental tobacco smoke, you pretty much did for alcohol and whether or not it would cause breast cancer in order to put into this article; is that correct?

A That's correct. But I had -- the article had another objective, would be to look at what are elements of the case/control studies. This was a review of however many case/control studies were available at the time. I think there were 38 -- if I got the

number correct -- on the topic. And I wanted to see if there was any -- if there were -- Dr. Roth and I wanted to see if there were any particular characteristic of a particular type of case/control study, particular element of it, that would lead to either an elevated or lower relative risk,

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so that was an objective also.
Q And examining whether or not alcohol, the ingestion of alcohol by women caused breast cancer, you looked at the available medical literature; isn't that correct?
A Correct.
Q And your conclusion was --
A The available case/control studies. That's what we were looking at.
Q And you state in summary, "The generally weak association supported in these case/control studies along with the measurement and/or selection biases implied by our findings would lead one to the conclusion that present evidence does not support a causal association." Correct?
A Correct, at the time.
Q Now, that's -- strike that.

If you look at page 215 of this article, you acknowledge that the study was supported in part by the Distilled Spirits Council of the United States.
A Correct.
Q And what is the Distilled Spirits Council?
A Distilled Spirits Council is a trade association for distilled spirits; whiskey, whatever, bourbon, scotch, that kind of thing.
Q Does that include beer?
A No.
Q So if Philip Morris manufactured beer, they would not be a member of this particular association, or do you know?
A No, I think it's just organizations like Seagrams, et cetera.
Q Have you been a consultant for the Distilled Spirits Council of the U.S.?
A Yes.
Q For how long?
A Not a consultant. I've been on their board for -- medical advisory board for, I believe, since 198- -- either '89 or '90. It's on my vita.

Q Well, do you recall in 1988 that there was an issue as to whether or not alcohol was going to be placed on a list of carcinogens by a committee, state committee in California, and you commented on the fact that there was no link between alcohol and cancer at that time?
MR. FURR: Your Honor, I just want to object on relevancy, it seems we're getting pretty far afield. He tried to connect it up with the defendant in this case, and he wasn't able to do it.
MR. PATRICK: It goes to generally bias, Your Honor.
MR. FURR: On behalf of who, Your Honor?

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THE COURT: Overruled. You can answer the last question.
Q Do you recall that?
A Yes.
Q And do you recall in stating when you stated that there was not enough evidence to link alcohol and cancer, that the investigators had not properly excluded all confounding factors, including tobacco?

A I don't remember -- well, yes, I probably said that because, especially with oral cancers. I don't remember saying that but, yes, I think that's a valid point.
Q Now, are you familiar with an organization called the Council for Tobacco Research?
A I think so, yes. If that's the research group.
Q Of the tobacco industry.
A Yeah. Yes.
Q Are you aware of that?
A Yes.
Q And have you received any funding from the Council for Tobacco Research?
A Not that I'm aware of.
Q But if you -- if the industry, or you, wanted to do a study of individuals or nonsmoking women who are, let's say, nurses exposed in the hospital setting, you could receive funding for such a study either from the Council for Tobacco Research or any members of the tobacco industry, could you not?
A What do you mean I could?
Q Well, it would be -- let's say that you

wanted to do a study that examined, particularly, whether or not there was a risk for lung cancer among nonsmoking nurses who were exposed to environmental tobacco smoke in hospitals. You could design such a study from an epidemiologic standpoint, could you not?
MR. WAGNER: Objection, Your Honor, relevance.
THE COURT: Sustained.
Q Do you know whether or not such a study has ever been performed?
MR. WAGNER: Same objection.
THE COURT: No, he can answer that. If you know.
THE WITNESS: Okay. Could you repeat the question?
Q In looking -- when you looked at all the medical literature concerning medical studies that involve the risk of cancer from environmental tobacco smoke, did you find a study that specifically looked at a cohort or a group of nonsmoking nurses who were exposed to environmental tobacco smoke in hospitals?

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A There were studies of -- cohort studies of nurses in hospitals and outside of hospitals in Finland and Denmark. The smoking status of the nurses was not known. There were two articles. One was Finish, one was Danish. But one didn't know smoking status. Those are the only studies I know that are particularly of nurses.
Q Did the nurses smoke or not smoke?
A No, they didn't have that data.
Q Excuse me?
A They did not have that data.
Q They did not have that data. So you don't know --
A I'll get closer to the mike.
Q You don't know whether or not those nurses smoked or not; correct?
A No.
Q So the answer to my question then as far as the United States was concerned, there, in fact, is no study of nonsmoking nurses in hospitals that would give you any information one way or the other as to whether or not environmental tobacco smoke would cause cancer in that population.

Correct?
A I'm not aware of any study, no.
Q Did you, in your review of the occupational studies, did you find any studies where individuals would be exposed to secondhand smoke in close proximity to a person, another person who was smoking a cigarette, so that the secondhand smoke was actually coming up into that person's face as that individual was holding the cigarette for an individual?
A No.
Q Would you agree with me that dose for dose, environmental tobacco smoke is more dangerous than mainstream smoke?
A I don't know.
Q Do you know what carcinogens are in environmental tobacco smoke?
A That's not an area of my expertise. I wouldn't care to comment on it.
Q Are you aware as to -- strike that.
Do you know if environmental tobacco smoke consists of 85 percent sidestream smoke and 15 percent mainstream smoke?
MR. WAGNER: Objection, Your Honor.

He just said he wasn't an expert in this in area.
Q If you know.
THE COURT: Sustained.
A I don't know the exact --
THE COURT: You don't have to answer that.

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A I know those are the two constituent -- you don't want me to answer that? I'm sorry.
Q Don't answer that.
A I'm sorry.
Q Just stop.
MR. MOTLEY: Might this be a good time to stop?
MR. WAGNER: Let's see if we can.
MR. MOTLEY: We're not going to get finished tonight, I can assure you.
THE COURT: How much more are you going to have, cross-examination?
MR. PATRICK: Your Honor, I probably have at least 30 to 45 minutes. I have tried to shorten it up.
THE COURT: I think we will take the evening break. We've had a long day.
Doctor, you may stop down.

(Standard admonition)
THE COURT: Who will be your next witness for the defense, tomorrow?
MR. OHLEMEYER: Your Honor, it all depends on how long this goes. We've got three witnesses tomorrow, either Dr. Coggins, Dr. Carchman, Dr. Townsend, Dr. Porter, but it all depends on when we can start, depending on people's schedule.
THE COURT: I'm sure sometime in the morning.
MR. OHLEMEYER: Absolutely.
THE COURT: Good evening, ladies and gentlemen.
MR. CASSELL: All rise.
MR. MOTLEY: Judge, can we have two minutes?
(Jury not present)
THE COURT: Sure. On the record or --
MR. MOTLEY: I'm reminded that I forgot to introduce, or move to introduce, while Dr. Bennett was here, his CV, although I asked him about it, he identified it, we marked it. I don't think I moved it in.

But that's not the -- what I really want to know, Judge, is, I'm confused about what counsel said about what's going to happen tomorrow.
We've been, at the end of each day, you've required them to tell us the lineup for tomorrow. I don't mean --
THE COURT: I think he told us three witnesses.
MR. OHLEMEYER: Four witnesses, Your Honor, and depending on when we can start, we'll get, I hope, to at least three of them. My intention is either start with Dr. Coggins, when we finish with Dr. Levy. But I don't know if we have 15 minutes of cross, or an hour of cross.
MR. MOTLEY: He said 30.

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MR. OHLEMEYER: I heard you say 45. Your Honor, my point is, both sides in this case have done a very poor job of estimating time. For no -- through nobody's fault at times.

But my point is, I want to put Dr. Coggins on tomorrow, I want to put Dr. Carchman on tomorrow. I either want to

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put Dr. Townsend or Dr. Porter on tomorrow, depending on how soon we can start.

THE COURT: That's about as good as it can go.

MR. MOTLEY: My only question, is Porter apt to come in the morning or in the afternoon, if he comes?

MR. OHLEMEYER: Well, he's apt to come in the afternoon.

MR. MOTLEY: That's all I need.

MR. OHLEMEYER: I've got a lot of ground I have to plow before I get there.

With respect to the CV, Your Honor, I don't know what your position is, but I think introducing witnesses' CVs is objectionable. In the first instance, they're hearsay. In the second instance, they don't provide the jury with any more information than what could have been elicited from the witness while he or she was on the stand. I think it's just potentially confusing to the jury to look through a CV and try to figure out what certain things are and what they mean, and the witness can be asked about them while he

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or she is here to testify.

MR. MOTLEY: Well, Your Honor, may I respond?

THE COURT: It was my recollection it was identified.

MR. MOTLEY: Yes, sir.

THE COURT: And you don't think you offered it into evidence?

MR. MOTLEY: I don't think I formally moved it into evidence. I just plum forgot. There have been, I think, two or three resumes introduced into evidence, and the reason why it's not hearsay is you asked the witness to attest that it's accurate and reflects his activities prior to coming into court so you don't have to sit there and go through them one by one. And that's why I want to put it into evidence, Your Honor.

THE COURT: What was the exhibit number?

MR. CASSELL: I don't believe it was ever marked.

THE COURT: It was never marked.

MR. OHLEMEYER: I don't think it

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was either.

MR. CASSELL: It was shown to him.

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THE COURT: I remember you showing it to him, asking him if that was it.

MR. MOTLEY: I remember I asked him about the publications, I thought that we identified it. He testified that was fair; it was his resume. I don't know that I ever offered it for any purpose.

MR. OHLEMEYER: Here's why it's not fair, even at this point. If he had offered it into evidence while the witness was here, and over my objection you admitted it, I could have asked the witness to explain things.

At this point the jury has heard the witness, the jury has heard a very lengthy cross-examination that focused almost exclusively on the witness' qualifications. And I don't think there's any probative value to admitting his CV. I think I said, as a general comment, I object to any CV, but especially in this case.

THE COURT: I'm going to go back and review his testimony regarding that

tonight. I'll rule on this in the morning.

MR. MOTLEY: Thank you, Judge.

THE COURT: Anything else we need to talk about, Counsel? Thank you.

(The proceedings were adjourned at 5:30 p.m., to be reconvened on March 10, 1998, at 8:30 a.m.)

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